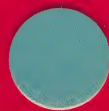


CONTROLS COMPANY OF AMERICA
CONTROL SWITCH DIVISION

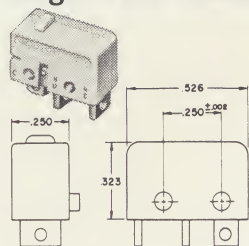


CONDENSED CATALOG



BASIC PRECISION SWITCHES

Single-Pole Microminiature T series

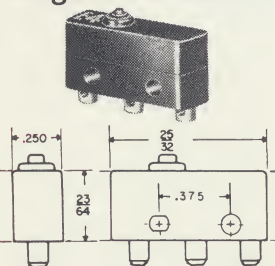


Ratings
125/250 VAC: 7.5 amps Ind. & Res.
125/250 VAC: 3 amps motor
28 VDC: 7.5 amps Res.
28 VDC: 2.5 amps Ind.
28 VDC: 3 amps Motor

Terminals—Solder

Types
T7 SPDT Conforms to MS28134-1
T12 SPDT U.L. Listed
(Types with other circuits and specs available)

Single-Pole Subminiature E4 series

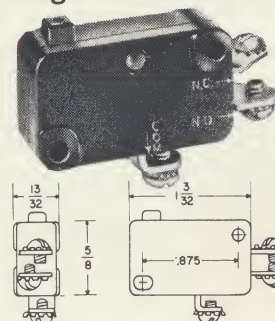


Ratings
125/250 VAC: 2.5 amps, 150,000 ops.
125/250 VAC: 5 amps, 100,000 ops.
30 VDC: 2.5 amps, Ind., 50,000 ops.
30 VDC: 4 amps, Res., 50,000 ops.

Terminals—Solder

Types
E4-103 SPDT Conforms to MS25085.
E4-107 SPDT —65° to 350°F.
E4-125 SPDT U.L. and C.S.A. Listed
(Types with other terminals, circuits and specs available.)

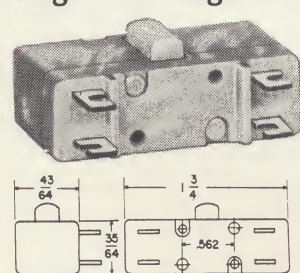
Single-Pole Miniature F series



Ratings
125/250 VAC: 10 amps
28 VDC: 10 amps, Res.
28 VDC: 6 amps, Ind.

Types
F3-3 SPDT Spade terminals.
F2-13 SPDT Screw terminals. Conforms to MS25253-1.
F2-16 SPDT Screw terminals. U.L. and C.S.A. Listed
(Types with other circuits, terminals, and specs available)

Single-Pole High Current G series

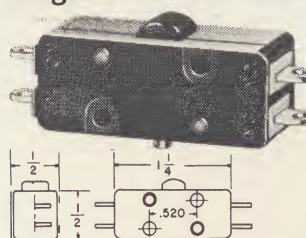


Ratings
125/250 VAC: 40 amps
30 VDC: 40 amps, Res.
30 VDC: 30 amps, Ind.

Terminals—Slot solder terminals

Types
G3-4 SPDT 2-cir.
G3-44 SPDT 2-cir. Conforms to MS25357 when derated.
(Types with other terminals and specs available)

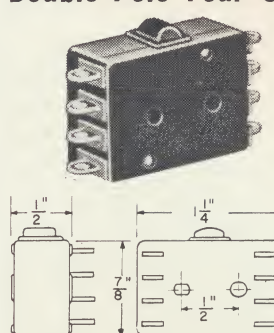
Single-Pole Two Circuit S series



Ratings
125 VAC: 10 amps, 750,000 ops.
30 VDC: 10 amps, 200,000 ops.

Types
S1-4 SPDT (dbl brk) End solder terminals.
S3-4 SPDT Side solder terminals.
S1-44 SPDT End solder terminals. Conforms to MS25342.
S3-44 SPDT Side solder terminals. Conforms to MS25342.
(Types with other circuits, terminals, and specs available)

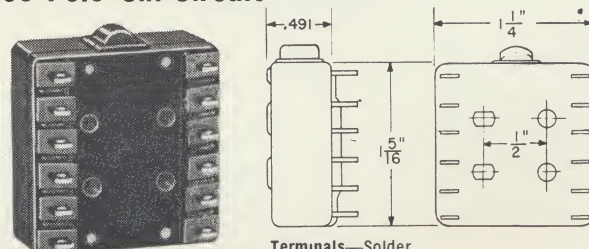
Double-Pole Four Circuit D series



Ratings
125/250 VAC: 15 amps
30 VDC: 15 amps, Res.
30 VDC: 10 amps, Ind.

Types
D4-4 DPDT 4 cir. End solder terminals.
D8-4 DPDT 4 cir. Side solder terminals.
D4-33 DPDT 4 cir. End solder terminals. U.L. Listed.
D8-33 DPDT 4 cir. Side solder terminals. U.L. Listed.
D4-44 DPDT 4 cir. End solder terminals. Conforms to MS25348-1.
D8-44 DPDT 4 cir. Side solder terminals. Conforms to MS25349-1.
(Types with other circuits, terminals, and specs available)

Three-Pole Six-Circuit K series

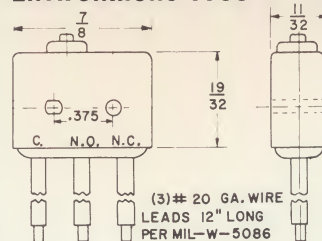


Ratings
125/250 VAC: 15 amps
30 VDC: 15 amps, Res.
30 VDC: 10 amps, Ind.

Terminals—Solder

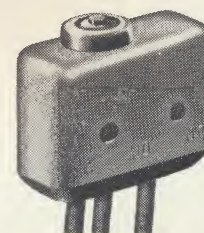
Types
K3-4 3PDT 6 cir.
K3-12 3PDT 6 cir. U.L. Listed
K3-44 3PDT 6 cir. Conforms to MS-25356-1
(Other circuits and specs available)

Environment Free EF series

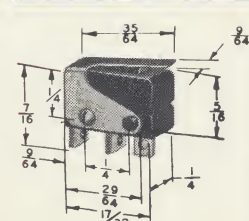


Ratings
125/250 VAC: 2.5 amps, 150,000 ops.
125/250 VAC: 5. amps, 100,000 ops.
30 VDC: 2.5 amps, Ind., 50,000 ops.
30 VDC: 4 amps, Res., 50,000 ops.

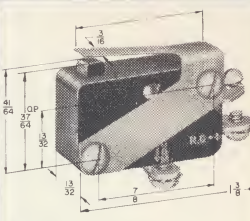
Types
EF-103 SPDT Wire leads. Plunger sealed with watertight diaphragm. Conforms to MIL-S-6743 and MIL-E-2572A.
(Other circuits, terminals, and specs available)



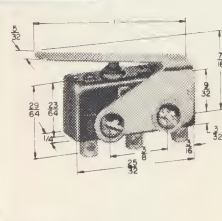
LEAF ACTUATED BASIC SWITCHES



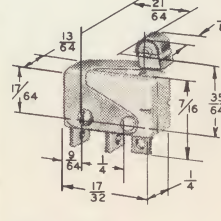
Leaf
Type A5-71/T7
Ratings:
See Type T7 basic switch.



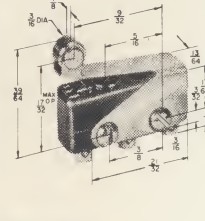
Leaf
Type A5-49/F2-13
Ratings:
See Type F2-13 basic switch.



Extended Leaf
Type A5-9/E4-103
Ratings:
See Type E4-103 basic switch.



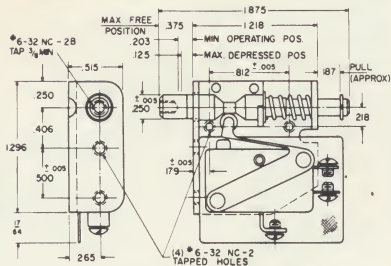
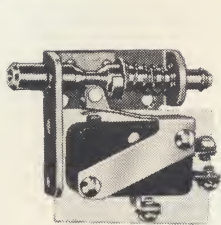
Roller Leaf
Type A5-73/T7
Ratings:
See Type T7 basic switch.



Roller Leaf
Type A5-10/E4-103
Ratings:
See Type E4-103 basic switch.



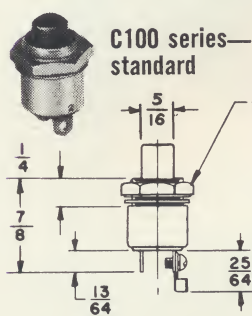
INTERLOCK SWITCH—Type C2-10



Provides safety interlock with manual override for equipment cabinet doors. Switch cuts power when door is opened; can be turned on again by qualified servicemen. Ratings: See Series F basic precision switches.

PUSHBUTTON SWITCHES

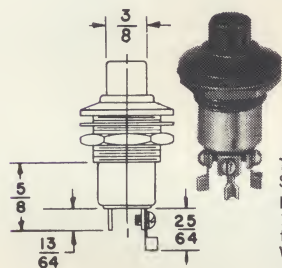
Types with Optional Mounting Adapters Positive Snap Action



C100 series—standard



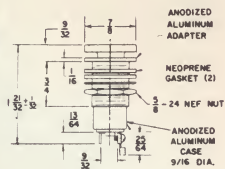
W100 series—
MOISTUREPROOF
(conforms to
MS25089)



C100 or
W100 with
Type P
adapter

Type No. & Circuits:
See table below. All momentary contact.
Ratings:
10 amps, 120 VAC or 28 VDC res. (3 amps max. thru center terminals of A800, A11200, W104, W105).
Options:
Adaptor types A, H, P, U, W shown at right. See Catalog 190 for other adapters, push-button styles, button shields, and colors.

Wide Button, Moistureproof w9600 series

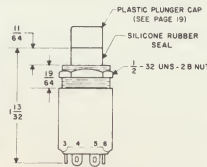


Type No. & Circuits:
See table below. All momentary, snap action.
Ratings:
10 amps res, 120 VAC or 28 VDC. (3 amps max. thru center terminal of W9604 & W9605).
Terminals: Solder.
Conforms to: MS25089
Options:
Black mounting adapter. Red or black button.

Type Numbers & Circuit Arrangements Select switches by these circuits

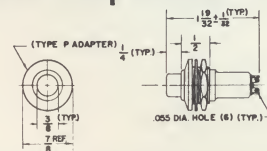
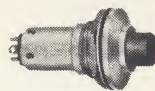
Series	SP-NO	SP-NC	SPDT 2 ckt.	SP-NO 3 term.	SP-NC 3 term.	SPDT
C100	C100	C3100	C200	A800	A11200	C4100
W100	W100	W102	W103	W104	W105	W106
W9600	W9601	W9602	W9603	W9604	W9605	W9606

Moistureproof, DPDT WC1500 series



Type No. & Circuits:
Type WC1503—DPDT 4 circuit, snap.
Ratings: 2 amps, 28 VDC, ind.
Conforms to: MS27903.
Terminals: Solder.
Options:
Adapter types H, P, U, W shown below. See Catalog 190 for other adapters, push-button styles and button shields.

Moistureproof, Alternate Snap Action J300 series

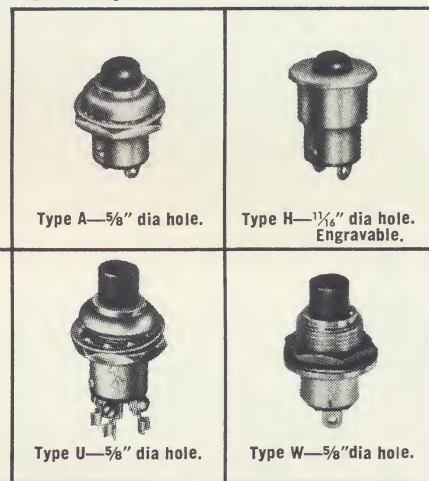


Type No. & Circuits: J313 — SPDT, push-push, 2 circuit.
J333 — DPDT, push-push, single break.
Ratings: J313 — 10 amps, 120 VAC or 28 VDC res.
J333 — 1 amp, 120 VAC or 28 VDC res.
Terminals: Solder
Conforms to: MS17974 and MS17975
Options: Adapter types P, U, W shown below. See Catalog 190 for other adapters.

Optional Mounting Adapters

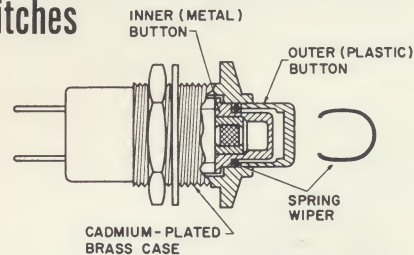
for
aforementioned
pushbutton
switches.

Anodized aluminum.
Colors available. For
ordering codes, see
Catalog 190.

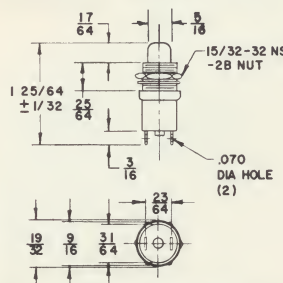


RFI-Shielded Switches

Special switches designed to attenuate RFI & EMI in the 0.15 to 1,000 mc range are available in the W100, WC1500, J300 and W9600 series shown above. For details, see Bulletin 62.



Miniature, Commercial Grade B2000 series



Type No. & Circuits:
B2001—SP-NO, double break, snap.
B2002—SP-NC, double break, snap.
Ratings:
8 amps, 120 VAC res.
3 amps, 28 VDC res.
Terminals: Solder
Options:
U.L. Listing, red instead of black nylon button.

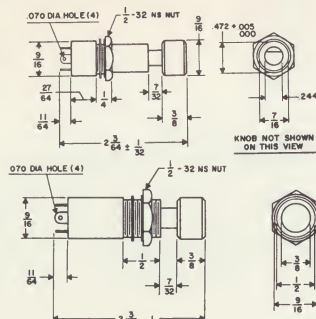
PUSHBUTTON SWITCHES Continued

Non-Snap, Keyboard Switches B5000 series



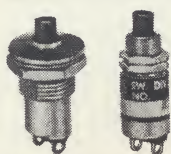
B5023

B5034



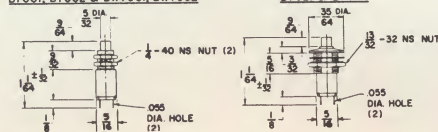
Type No. & Circuits:
B5023—SPDT, 2 ckt non-snap (extension neck).
B5034—SPDT, 2 ckt, non-snap.
Ratings: 3 amps, 28 VDC res.
Terminals: Solder
Options: Colored buttons with engraved numerals.

Subminiature 5 Amp B7000 series



B7001, B7002 & BW7001, BW7002

B7021 & B7022



Model Numbers—all snap action

Circuit	With Threaded Bushing		With Panel Flange
	Standard	Moistureproof	Standard
SP-NO	B7001	BW7001	B7021
SP-NC	B7002	BW7002	B7022

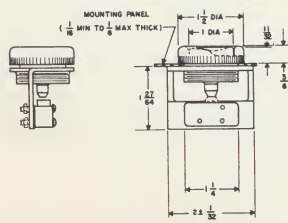
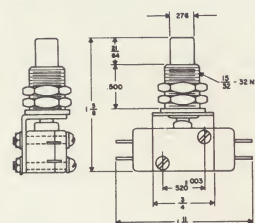
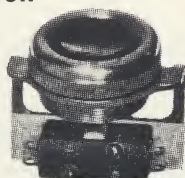
Ratings: 5 amps, 125 VAC or 28 VDC res.
Terminals: Solder
Options: Black cases, colored pushbuttons.

SPDT 2-ckt, 10 amp, Snap Action



A4-1/S1-4

A4-102/S1-21



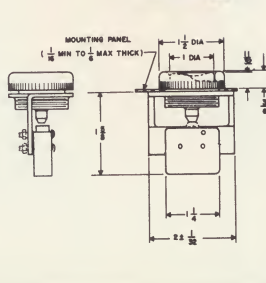
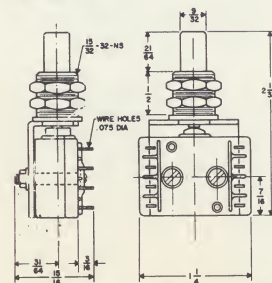
Ratings: 10 amps, 125 VAC. U.L. Listed.
1 amp, 125 VAC. Pilot duty.
10 amps, 30 VDC res.

DPDT 4-Ckt, 15 Amp Snap Action



A4-2/D8-4

A4-102/D8-4



Ratings: 15 amps, 125/250 VAC or 30 VDC res.
10 amps, 30 VDC ind.

5 amp, Momentary Contact, Snap Action Single Break

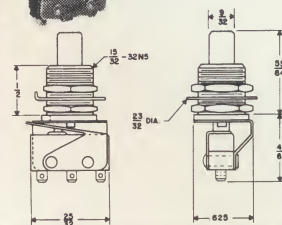
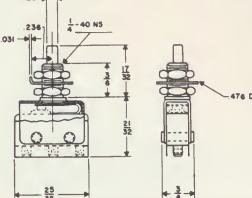
Ratings: 5 amps, 125/250 VAC; 2.5 amps, 30 VDC ind., 4 amps, 30 VDC res.



A4-5-103 SPDT



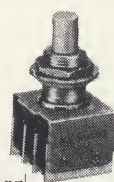
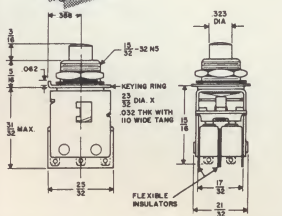
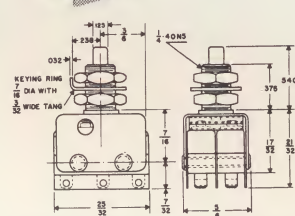
A4-18-103 SPDT



A4-6-103 DPDT



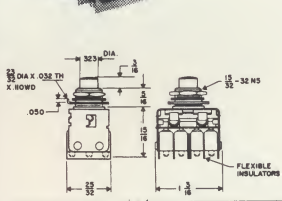
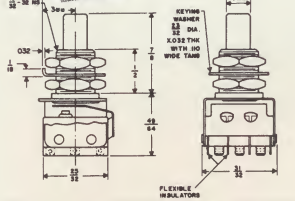
A4-86-103 DPDT



A4-14-103 3PDT



A4-332-103 4PDT



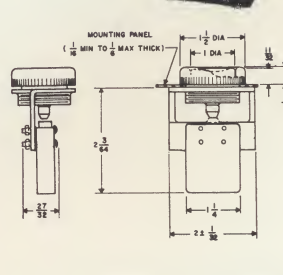
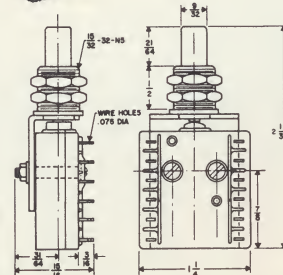
3PDT 6-Ckt, 15 Amp Snap Action



A4-2/K3-4



A4-102/K3-4



Ratings: 15 amps, 125/250 VAC or 30 VDC res.

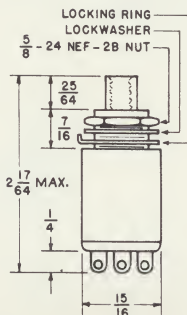
LIGHTED PANEL SWITCHES

Switchlites — see bulletin 63.

Compact pushbutton switches with integral indicator lights. Select one of six lens styles from table below. All types designed to meet MIL-S-22885 and furnished with MS-25237-327 (28 volt) lamps.

- 2 Circuit momentary snap action—A84100 series
2 circuit push-pull snap action—A85200 series

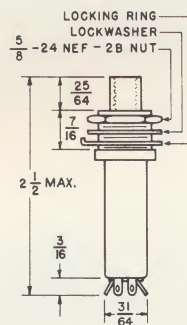
Contact Ratings:
7.5 amp, 115 VAC or 28 VDC res.
5 amp, 115 VAC or 28 VDC ind.



- 2 Circuit, alternate snap action—J83100 series



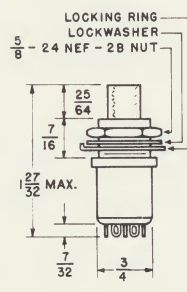
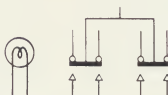
Contact Ratings:
5 amps, 115 VAC or 28 VDC res.
3 amps, 115 VAC or 28 VDC ind.



- 4 Circuit, momentary snap action—A85100 series
4 Circuit, push-pull snap action—A85200 series

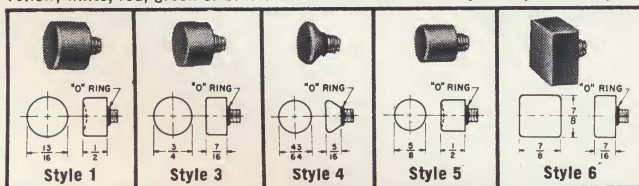


Contact Ratings:
4 amps, 115 VAC, or 28 VDC res.
2 amps, 115 VAC or 28 VDC ind.



Lens Styles for Switchlites

Yellow, white, red, green or blue translucent. Clear in transparent plastic only.



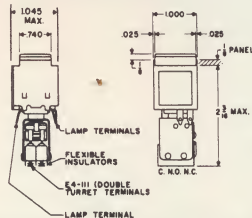
Twinlites™ — see Bulletin 55-C

Combines DPDT switch with two-color pushbutton lens. Legend may be inserted behind lens. Two 28 volt midget screw base (T1 3/4) lamps supplied. Switches rated 5 amps, 125/250 VAC; 4 amps res or 2.5 amps ind, 30 VDC. Barriers available for row and matrix mounting—consult Bulletin 55-C for mounting details. Other Twinlites available including alternate action, 4PDT, and types without switches for use as indicator lights. Two popular types shown below.



C6-56-RG22
momentary, positive feel. 2 clear 28V lamps. 2 piece button, 1/2 red, 1/2 green.

C6-57-YB22
push - push. 2 clear 28V lamps. 2 piece button, 1/2 yellow, 1/2 blue.



TOGGLE SWITCHES

Microminiature, 1 Amp T4200 & T4300 series

Ratings, 120 VAC or 28 VDC: 1 amp res., 1/2 amp ind., 1/4 amp lamp.

MODEL NUMBERS

Circuit	MAINTAINED—MAINTAINED	See Figure
SPST	T4201	A
SPDT	T4203	B
	T4205	C
DPST	T4301	B
	T4303	C

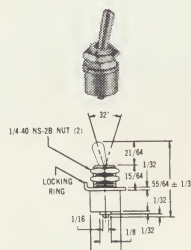


FIG. A
Threaded bushing; case ground for printed-circuit mounting

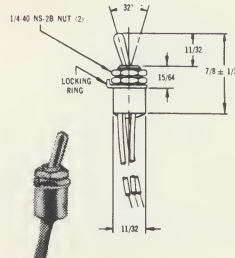


FIG. B
Threaded bushing; potted #28 wire leads 10" long

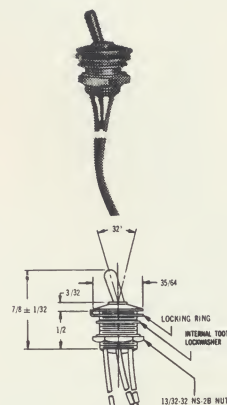


FIG. C
Decorative bezel mounting; potted #28 wire leads 10" long (for black flange & toggle, add "B" to model no.)

Subminiature, SPDT T3100 series

Ratings, 120 VAC or 28 VDC: 5 amp res., 3 amp ind., 1 amp lamp.

MODEL NUMBERS

Circuit	MAINTAINED—MAINTAINED	See Figure
	Standard Moistureproof	
SPDT	T3103 TW20002 (MS18151)	J
	T3106	K
	T3113	L

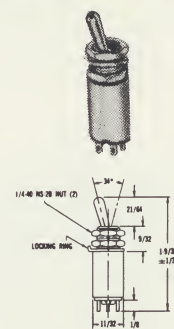


FIG. J
Threaded bushing; solder terminals

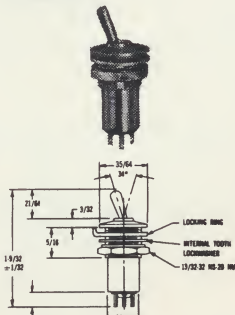


FIG. K
Decorative bezel mounting; solder terminals

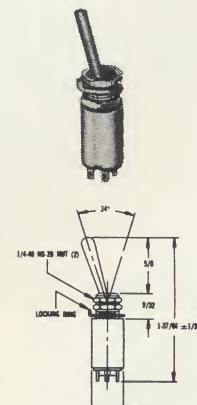
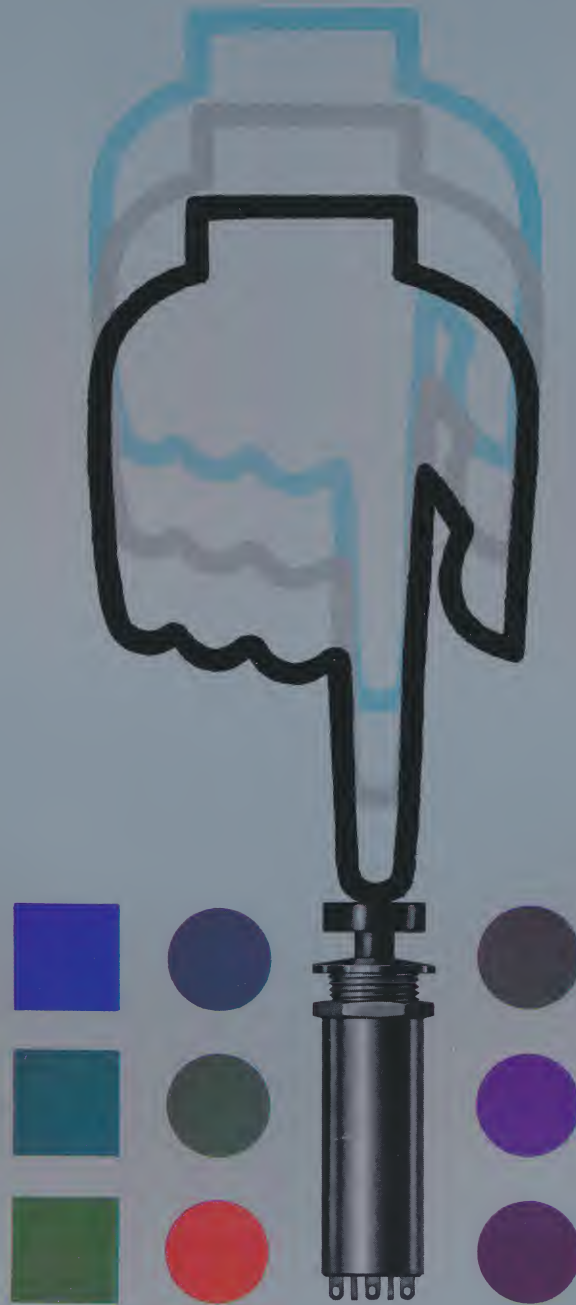


FIG. L
Long handle; threaded bushing; solder terminals

CONTROLS COMPANY OF AMERICA
CONTROL SWITCH DIVISION
 1420 Delmar Drive • Folcroft, Pennsylvania
 Telephone: LUdlow 6-7500 • TWX 215-534-0241



For detailed information on other products, write for
 any of the catalogs shown above.
 Also see our listing in EEM, sec. 3900 & sec. 5100



PUSHBUTTON SWITCHES



CAN'T FIND IT?

This catalog lists only the most popular switch actions and ratings. If none meet your needs, ask us. The standard switches listed can often be modified to special specs at small extra cost. And Control Switch production flexibility permits the manufacture of even fully-special switches economically.

INDEX

BY SWITCH RATING

page

page

1 amp. Resistive

Maintained Contact—
DPDT 13

3 amp. Resistive

Momentary Contact—
SP-NO, SP-NC, SPDT 2 CIRCUIT,
DPDT, DPDT 4 CIRCUIT 4, 5

4 amp. Resistive

Momentary Contact—
SPDT, DPDT, 3PDT, 4PDT 6, 7
Maintained Contact—
SP, DPDT 8

5 amp. Resistive

Momentary Contact—
SP-NO, SP-NC 9

10 amp. Resistive

Momentary Contact—
SP-NO, SP-NC, SPDT 2 CIRCUIT, SPDT,

SP-NO 3 TERM, } (3A center terminals)
SP-NC 3 TERM, } 10-12
SP-NO 4 TERM, }

Maintained Contact—
SPDT 2 CIRCUIT 13

10-15 amp. Resistive

Momentary Contact—
SPDT, SPDT 2 CIRCUIT,
DPDT 4 CIRCUIT, 3PDT 6 CIRCUIT. 14-16

15 amp. Resistive

Momentary Contact—
DP-NO, DP-NC, DPDT 17
SP-NO 3 TERM, SP-NC 3 TERM
(3A center terms) 18

35 amp. Resistive

Momentary Contact—
SP-NO, SP-NC, SPDT 2 CIRCUIT 18

40 amp. Resistive

Momentary Contact—
SPDT 2 CIRCUIT, DPDT 4 CIRCUIT ... 18

BY FUNCTION

Momentary Contact

SP-NO Double Break
3 amp. 4
5 amp. 9
10 amp. 10-12
35 amp. 18

SP-NC Double Break
3 amp. 4
5 amp. 9
10 amp. 10-12
35 amp. 18

SP-NO 3 Terminal
(3A center terms)
10 amp. 10-12
15 amp. 18

SP-NC 3 Terminal
(3A center terms)
10 amp. 10-12
15 amp. 18

SP-NO 4 Terminal
10 amp. (3A center
term) 18

SPDT 2 Circuit
3 amp. 4, 5
10 amp. ... 10-12, 14-16
35 amp. 18
40 amp. 18

SPDT Single Break
4 amp. 6

SPDT Double Break
10 amp. 10-12

DP-NO Double Break
15 amp. 17

DP-NC Double Break
15 amp. 17

DPDT 4 Circuit
3 amp. 5
15 amp. 14-16
40 amp. 18

DPDT Single Break
3 amp. 4
4 amp. 6, 7

DPDT Double Break
15 amp. 17

3PDT Six Circuit
15 amp. 14-16

3PDT Single Break
4 amp. 7

4PDT Single Break
4 amp. 7

Maintained Contact

SP Double Break
Push On-Push Off
4 amp. 8

SPDT 2 Circuit Push-Push
10 amp. 13

DPDT Single Break Push-Push
1 amp. 13
4 amp. 8

Most types available with U.L. listing

INDEX BY TYPE NUMBER

Page		Page		Page		Page	
A4-1/S1-4	14	A4-67/D8-4	15	B2000 Series	4	J300 Series	13
A4-2/D8-4	14	A4-67/K3-4	15	B5023	5	J4004	13
A4-2/K3-4	14	A4-67/S1-21	15	B5034	5	J4010	8
A4-5-103	6	A4-86-103	7	B7000 Series	9	W100 Series	10, 11
A4-6-103	6	A4-87-103	8	B7070	4	WC1500 Series	5
A4-14-103	7	A4-102/D8-4	16	B7080	4	W9000 Series	12
A4-18-103	6	A4-102/K3-4	16	C100 Series	10, 11	W9600	12
A4-50/G3-8	18	A4-102/S1-21	16	D200 Series	18		
A4-51	18	A4-332-103	7	H2200 Series	17		

TYPES TO MIL-S-6743 SPECIFICATIONS

MS Part Number	Control Switch Series Number	Page	MS Part Number	Control Switch Series Number	Page
MS17974-1 thru -12	J300 Series	13	MS25085-1	See A4 types with "103" (E4-103) basic switches	6-8
MS17975-1 thru -12	J300 Series	13	MS25089	W100 Series	10, 11
MS24318-1	W100 Series	10, 11	MS27903	WC1500 Series	5

OPTIONS

Optional Pushbuttons for Basic Switches	19	Mounting Adapters	21 & 22
Auxiliary Pushbuttons for Switches with Adapters	20	Adapter Colors	22
Pushbutton Colors	20	Pushbutton Shields	23

MECHANICAL TERMS

Free Position . . . the unoperated, fully extended position of the actuator.

Pretravel . . . distance the actuator travels from Free Position to the Operating Position.

Operating Position . . . the position of the actuator when the snap action of all switch contacts occurs during actuation stroke.

Operating Force . . . force applied to the actuator to reach the Operating Position.

Overtravel . . . movement of actuator

from Operating Position to final position at end of actuating stroke.

Overtravel Force . . . force applied to actuator to move from Operating Position to full Overtravel Position.

Reset Position . . . Position of actuator when all switch contacts return to positions prior to actuation.

Movement Differential . . . distance or angle the actuator travels in returning from Operating Position to Reset Position.

Release Force . . . the amount of external force the switch will overcome at actuation point when returning from Overtravel Position to Free Position.

Total Travel . . . sum of pretravel and overtravel.

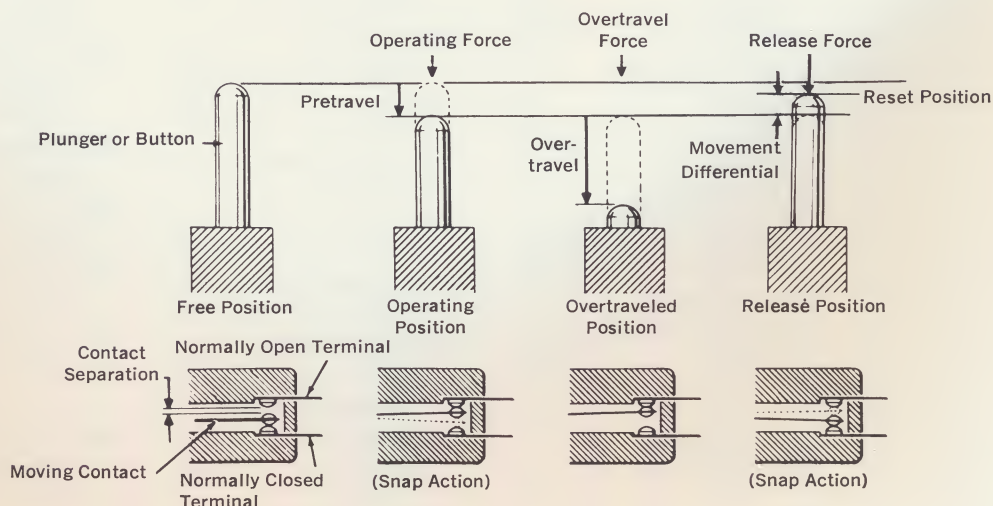
Snap Action . . . a rapid motion of the contacts from one position to another. Snap Action is independent of rate of travel of actuator.

Contact Pressure . . . the amount of force holding stationary and movable contacts together.

Contact Gap . . . the effective open distance between the movable and stationary contacts.

Multiple Break . . . an arrangement of contacts such that the circuit is broken simultaneously in several places.

PLUNGER MOVEMENT DIAGRAMS

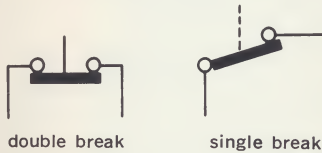


Circuit Schematics used in this Catalog

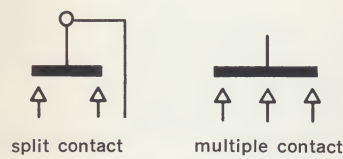
SP-NO
Single Pole,
Normally Open



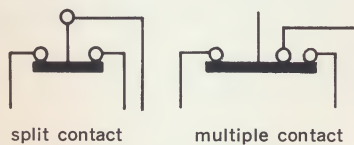
SP-NC
Single Pole,
Normally Closed



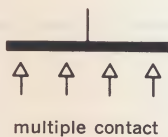
SP-NO 3 Terminal
Single Pole,
Normally Open,
Three Terminal



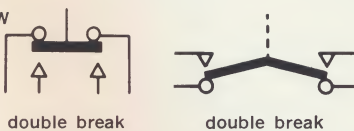
SP-NC 3 Terminal
Single Pole,
Normally Closed,
Three Terminal



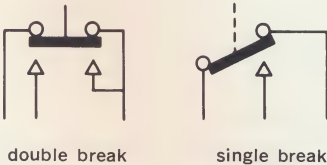
SP-NO 4 Terminal
Single Pole,
Normally Open,
Four Terminal



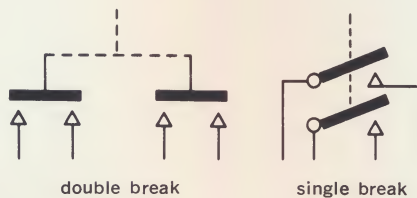
SPDT 2 Circuit
Single Pole, Double Throw
2 Circuit



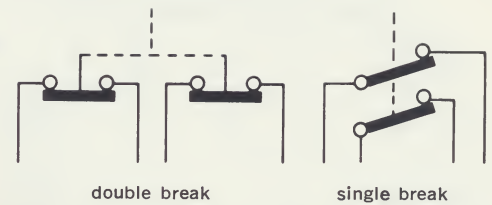
SPDT
Single Pole, Double Throw.
(Double break types
are SP 2 Circuit with
external jumper across
terminals.)



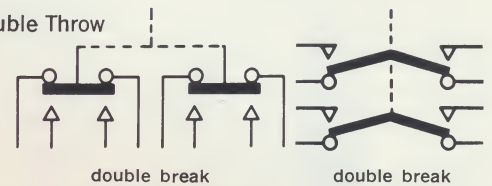
DP-NO
Double Pole,
Normally Open



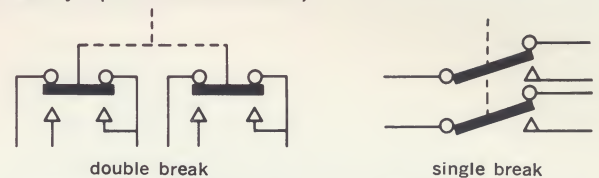
DP-NC
Double Pole,
Normally Closed



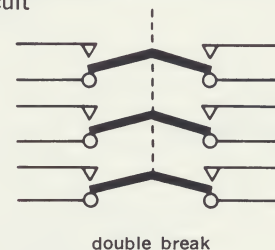
DPDT 4 Circuit
Double Pole, Double Throw
4 Circuit



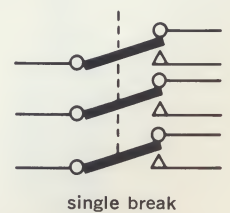
DPDT
Double Pole, Double Throw
(Double break types are DP 2 Circuit
with external jumpers across terminals.)



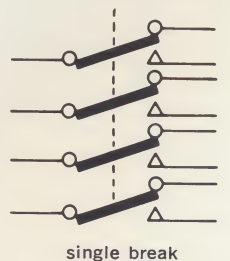
3PDT 6 Circuit
Triple Pole, Double Throw
6 Circuit



3PDT
Triple Pole, Double Throw



4PDT
Four Pole, Double Throw



3 amp. Resistive Rating

Momentary

B2000 SERIES—MINIATURE



- (1) B2001—SP-NO, double break
B2002—SP-NC, double break

Action: Momentary, snap.
Total Plunger Travel: $9/64$ in. approx.
Operating Force: $1\frac{1}{2} \pm \frac{1}{2}$ lb.
Weight: .012 lb.
Mechanical Life, ops., min: 25,000
Electrical Ratings: 8 amps, 120 VAC res.
3 amps, 28 VDC res.

Terminals: Solder

- (2) Pushbutton: Black nylon standard.
Red available.

- (3) U.L. Listing: If required, add -HR after pushbutton color designation, if used.

NOTE: This switch designed for commercial applications only.

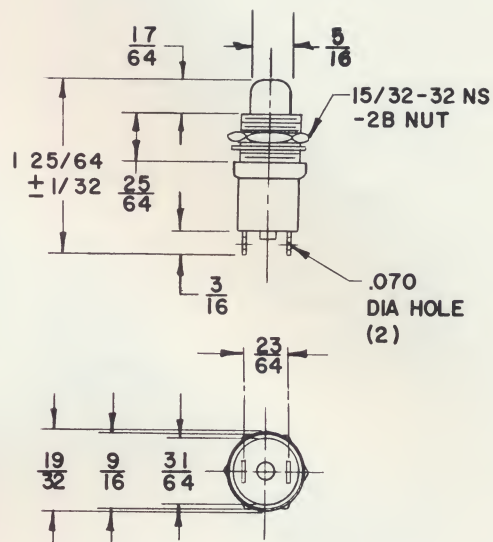
Ordering Example:

B2002 R -HR

Circuit. See (1).

Pushbutton color. See (2). R-red.
Omit for black.

See (3).



B7070 SERIES—MINIATURE



- (1) B7070—DPDT, single break
B7080—SPDT, 2 circuit

Action: Momentary, snap.
Total Plunger Travel: .093 in. approx.
Operating Force: 2 lbs. $\pm \frac{1}{2}$ lb.
Weight: .020 lb. approx.
Load Life, ops., min: 10,000
Electrical Ratings: 3 amps, 115 VAC or 28 VDC resistive

Terminals: Solder

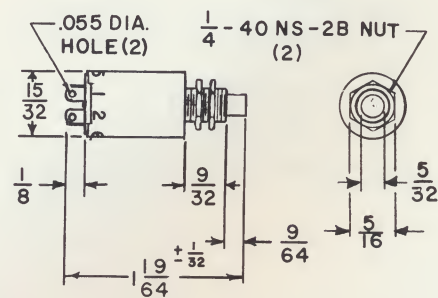
Pushbutton: Black plastic standard.
Red available.

Ordering Example:

B7070 R

Circuit. See (1).

Pushbutton color. R—red. Omit if black.



Momentary

3 amp. Resistive Rating

B5000 SERIES—KEYBOARD TYPE



TYPE B5023



TYPE B5034

- (1) **B5023**—SPDT, 2 circuit (with extension neck)
B5034—SPDT, 2 circuit

Action:

Mechanical Life,
ops., min:

Electrical Ratings:

Terminals:

Pushbutton:

Momentary, non-snap

100,000

3 amps, 28 VDC res.

Solder

Black plastic standard on flattened nylon plunger for keyboard use. Green, red, and white also available. Buttons can be engraved with single, 1/4" high Gorton numerals. Write for print. Numerals are white on black buttons, black on colored buttons.

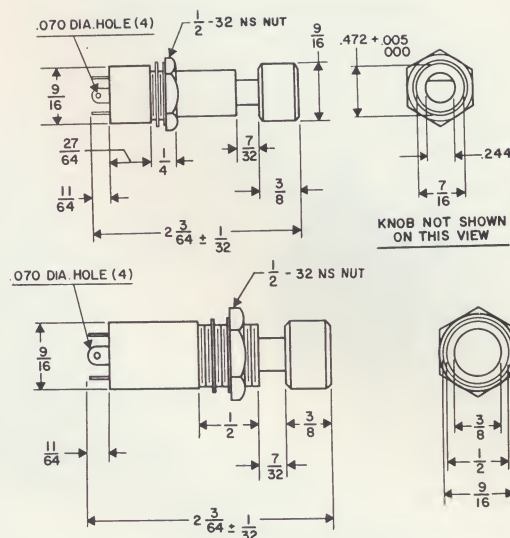
Ordering Example:

Circuit. See (1).

Pushbutton color. R—red, G—green,
W—white. Omit if black.

Engraved numeral. Last digit designates
numeral desired (0-9).

B5023 R -02



WC1500 SERIES—MOISTUREPROOF

- WC150**—DPDT, 4 circuit (may be jumpered for DPDT)

Action:

Momentary, snap.

Total Plunger Travel:

.085 in. approx.

- (1) **Operating Force:**

5 lbs ± 1 lb. 2 lbs ± 1 lb by adding -02 after complete type number. 3 lbs ± 1 lb by adding -03 after complete type number.

Load Life, ops., min:

25,000

Weight:

.035 lb. approx. (basic switch).

Electrical Ratings:

2 amps ind, 28 VDC

Terminals:

Solder

- (2) **Pushbutton:**

Black plastic standard in Types 2, 3, 6, 8, 12 shown on page 19. Red available.

Pushbutton Shields:

See page 23.

Basic switch conforms to:

MS27903

- (3) **Variations Available:**

A. Optional mounting adapter Types D, E, F, H, J, K, L (with #5 plunger), P, PA, PAK, Q, S, U, V, W, Z shown on page 21.

B. Adapters available with Types 2, 3, 4, 6, 8, 12, 34 auxiliary plunger caps shown on page 20.

Note: Special RFI shielded models available. Request details.



TYPE WC1503



TYPE WC150P3

SWITCHES SHOWN ACTUAL SIZE

Ordering Example:

- A. Basic switch without adapter:**

WC150 6 R -02

Basic switch number.

Pushbutton type. See (2).

Pushbutton color. R—red. Omit if black.

See (1). Omit for 5 lb.

- B. Switch with mounting adapter:**

WC150 D B 6 R -03

Basic switch number.

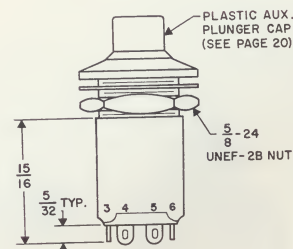
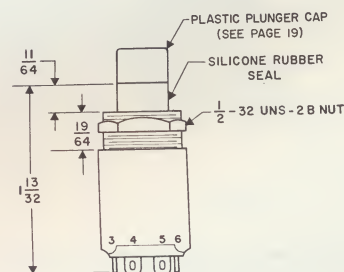
Adapter type. See (3).

Adapter color. B—black, R—red. Omit if clear.

Aux. plunger type. See (3).

Aux. plunger color. R—red. Omit if black.

See (1). Omit for 5 lb.



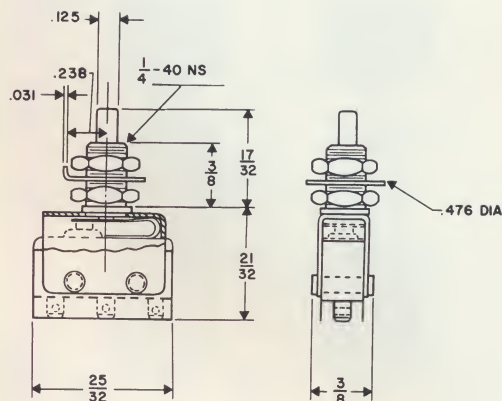
4 amp. Resistive Rating

Momentary

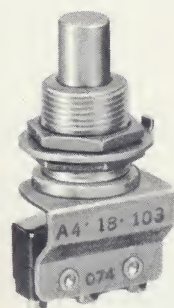
A4-5-103—SPDT, single break



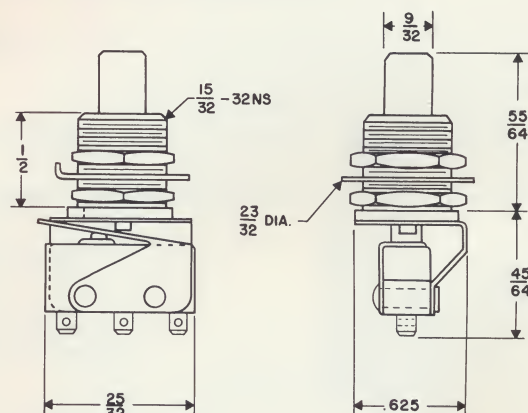
Action: Momentary, snap
Pretravel, max: .062 in.
Overtravel, min: .109 in.
Overtravel Force, approx: 2½ lbs.
Movement Differential, max: .031 in.
Operating Force, max: 18 oz.
Release Force, min: 3 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 5 amps, 120/250 VAC
 2.5 amps, 30 VDC, ind.
 4 amps, 30 VDC, res.
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Metal
Basic switch conforms to: MS-25085-1
Variations Available: Use any E4 switch in Catalog 110.



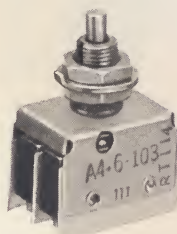
A4-18-103—SPDT, single break



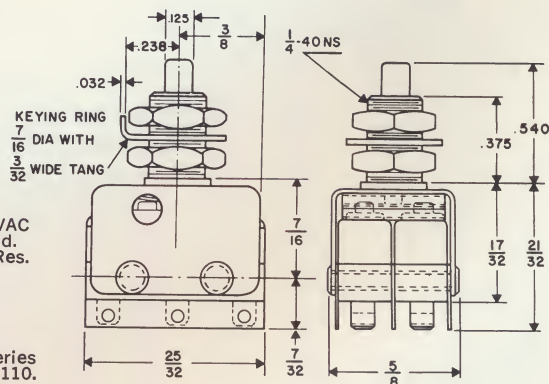
Action: Momentary, snap
Pretravel, max: .025 in.
Overtravel, min: .250 in.
Movement Differential, max: .003 in.
Operating Force, max: 16 oz.
Release Force, min: 2 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 5 amps, 125/250 VAC
 2.5 amps, 30 VDC ind.
 4 amps, 30 VDC res.
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Metal
Basic switch conforms to: MS-25085-1
Variations Available: Use any E4 switch in Catalog 110.



A4-6-103—DPDT, single break



Action: Momentary, snap
Pretravel, max: .090 in.
Overtravel, min: .075 in.
Movement Differential, max: .031 in.
Operating Force, max: 2½ lb.
Overtravel Force, max: 3½ lb.
Release Force, min: 2 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 5 amps, 125/250 VAC
 2.5 amps, 30 VDC, ind.
 4 amps, 30 VDC, Res.
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Metal
Variations: Use any E4-100 Series switch in Catalog 110.

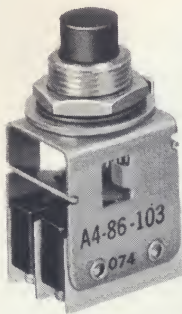


SWITCHES SHOWN ACTUAL SIZE

Momentary

4 amp. Resistive Rating

A4-86-103—DPDT, single break



Action: Momentary, snap
POSITIVE-FEEL.

Operating Force: 32 oz. approx.

Weight: .044 lb.

Mechanical Life, ops., min: 150,000

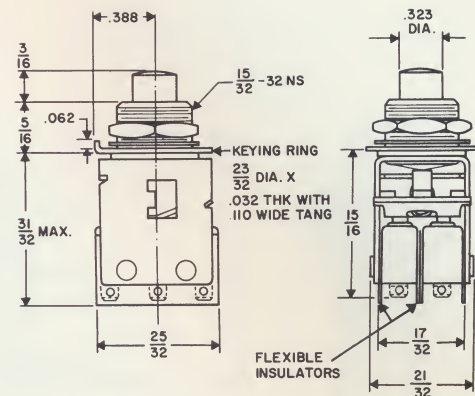
Electrical Ratings: 5 amps, 125/250 VAC
2.5 amps, 30 VDC ind.
4 amps, 30 VDC res.

Terminals: Solder

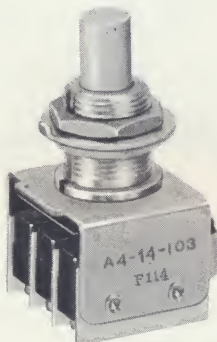
Ambient Temperature Range: -54° to +121°C

Pushbutton: Black plastic.

Variations: Use any E4-100 Series switches in Catalog 110.



A4-14-103—3PDT, single break



Action: Momentary, snap

Pretravel, max: .125 in.

Overtravel, min: .125 in.

Operating Force: 3 lb. approx

Release Force: 1½ lb. approx

Mechanical Life, ops., min: 150,000

Electrical Ratings: 5 amps, 120/250 VAC
2.5 amps, 30 VDC ind.
4 amps, 30 VDC res.

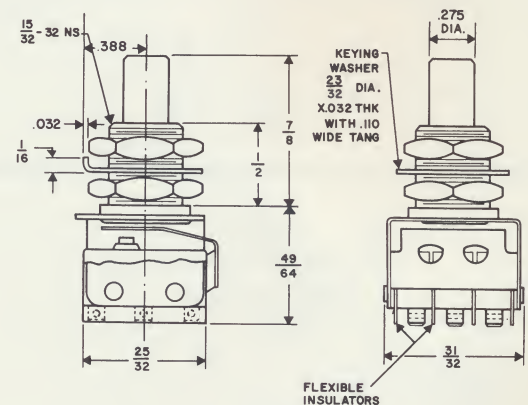
Terminals: Solder

Ambient Temperature Range: -54° to +121°C

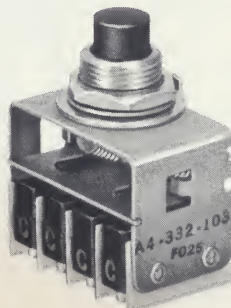
Pushbutton: Metal

Basic switch conforms to: MS-25089-1

Variations Available: Use any E4 switch in Catalog 110.



A4-332-103—4PDT, single break



Action: Momentary snap
POSITIVE-FEEL.

Pretravel: .156 in. approx.

Overtravel, min: .031 in.

Operating Force: 3 ± 1 lb.

Weight: .09 lb. approx.

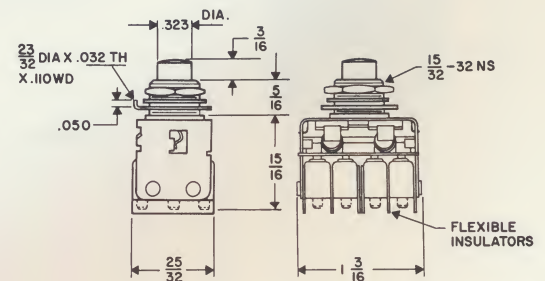
Mechanical Life, ops., min: 50,000

Electrical Ratings: 5 amps, 120/250 VAC
2.5 amps, 30 VDC ind.
4 amps, 30 VDC res.

Terminals: Solder

Pushbutton: Black plastic. Red plastic available as Type A4-332-1-103.

Variations Available: Use any E4-100 Series switch in Catalog 110.



SWITCHES SHOWN ACTUAL SIZE

4 amp. Resistive Rating

Maintained

J4010—SP Push On-Push Off, double break



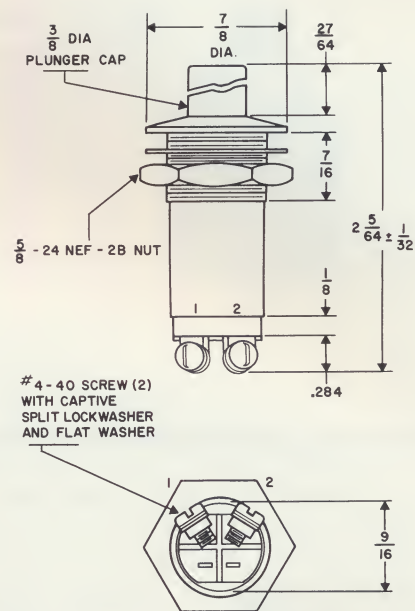
- Action:** Alternate snap
- Total Plunger Travel:** .265 in. approx.
- Operating Force:** 2¼ lbs. ± ½ lb.
- Weight:** .038 lbs. approx.
- Electrical Ratings:** 3 amps ind, 115 VAC or 28 VDC
- Terminals:** Screw
- (2) **Case:** Clear anodized aluminum standard. Black, gold, and satin anodized available.
- (3) **Pushbutton:** Plastic. Black, white, gray, and red available.

Ordering Example:

Circuit. **J4010 B R**

Case color. See (2). B—black, GO—gold, CA—satin anodized. Omit for clear.

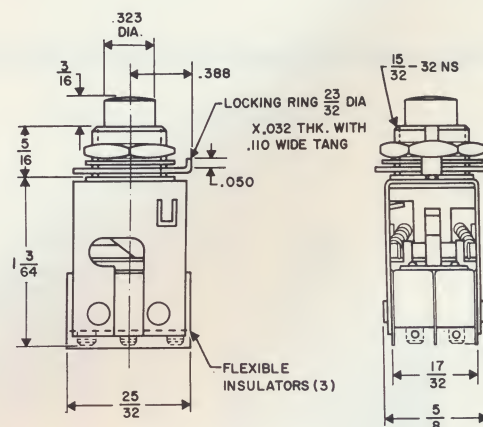
Pushbutton color. See (3). B—black, W—AN511 insignia white, GY—gray, R—red.



A4-87-103—DPDT Push-Push



- Action:** Alternate snap
- Operating Force, max:** 6 lb.
- Mechanical Life, ops., min:** 50,000
- Electrical Ratings:** 5 amps, 125/250 VAC
2.5 amps, 30 VDC ind.
4 amps, 30 VDC res.
- Terminals:** Solder
- Pushbutton:** Black plastic standard as A4-87-103. Red as Type A4-87-1-103. Light blue as Type A4-87-2-103. White as Type A4-87-3-103. Green as Type A4-87-4-103.
- Variations Available:** Use any E4-100 basic switch from Catalog 110.



Momentary

5 amp. Resistive Rating

B7000 SERIES—SUB-MINIATURE

	With Threaded Bushing		With Panel Flange
	Standard	Moistureproof	Standard
(1) SP-NO double break	B7001	BW7001	B7021
SP-NC double break	B7002	BW7002	B7022



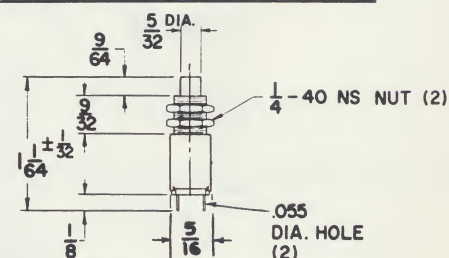
TYPE BW7002
(Moistureproof. SP-NC)



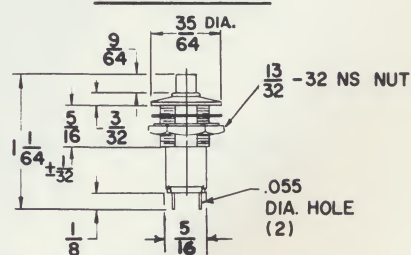
TYPE B7021
(Non-Moistureproof. SP-NO)

- Action:** Momentary, snap
Total Plunger Travel: .085 in. approx.
Operating Force: $1 \pm \frac{3}{8}$ lb.
Weight: .010 lb. approx.
Mechanical Life, ops., min: 25,000
Electrical Ratings: 5 amps, 125 VAC or 28 VDC, resistive.
Terminals: Solder
(2) Pushbutton: Black phenolic standard. White, red, and green available.
(3) Case: Clear anodized aluminum standard. Black available.
Moistureproofing: Internal plunger seal in Types BW7001 & BW7002.
- Ordering Example:**
- B7021 B R
- Circuit & style. See (1).
Case color. See (3). B—black, omit for clear.
Pushbutton color. See (2). R—red, W—white, G—green. Omit for black.

B7001, B7002 & BW7001, BW7002



B7021 & B7022



**PANEL MOUNTING DIMENSIONS
(FOR B7021 & B7022)**



10 amp. Resistive Rating

Momentary

C100 SERIES—STANDARD

W100 SERIES—MOISTUREPROOF

	STANDARD	MOISTUREPROOF
SP-NO double break	C100	W101
SP-NC double break	C3100	W102
(1) SPDT 2 circuit	C200	W103
SP-NO 3 terminal	A800	W104
SP-NC 3 terminal	A11200	W105
SPDT double break	C4100	W106

C100 SERIES

Action: Momentary snap
Total Plunger Travel: .085 in. approx.
Operating Force: 3½ lb. ± 1 lb.
Weight: .020 lb. (Basic switch).
.025-.050 lb. with adapters.

Load Life, ops., min: 25,000
Electrical Ratings: 10 amps, 120 VAC or 28 VDC resistive (3 amps max. thru center terminal of A800 and A11200).

Terminals: Solder
(2) Pushbutton: Black plastic standard. Red available. Standard basic switches available with Types 2, 3, 6, 7, 8 or 9 pushbuttons shown on page 19; or with non-standard Type 5.

(3) Variations Available: A. Optional mounting adapter Types A, B, C3, D, E, F, H, J, L (with #5 plunger), M, N, P, T, U, V, W, Y shown on page 21 are available as standards. Non-standard adapters are Types G, K, MA, NA, PA, Q, R, S, X.
B. Above adapters available with Types 2, 3, 4, 7, 8, or 9 auxiliary plunger caps as shown on page 20.
C. Pushbutton shields, see page 23.

Note: Special RFI shielded models available. Request details.

W100 SERIES

Action: Momentary snap
Total Plunger Travel: .085 in. approx.
Operating Force: 4 lb. ± 1 lb.
Weight: .020 lb (Basic switch).
.025-.050 lb. with adapters.

Load Life, ops., min: 25,000
Electrical Ratings: 10 amps, 120 VAC or 28 VDC resistive 3 amps max. thru center terminal of W104 and W105).

Terminals: Solder
(2) Pushbutton: Black plastic standard. Red available. Standard basic switches available with Types 2, 3, 4, 6, or 7 plungers shown on page 19; or non-standard Types 1, 8, 12, or 34.

Switch conforms to: MS25089
(3) Variations Available: A. Optional mounting adapter Types AC, D, E, F, H, J, L (with #5 plunger), M, N, P, PA, U, V, W, Y shown on page 21 are standard. Non-standard adapters are Types A, AD, AE, C3, DA, GA, GC, GD, L (with #51 plunger), LA (with #5 plunger), MC, NA, PD, PL, R, WA, Z.

B. Standard auxiliary plunger caps shown on page 20 are Types 2, 3, 4, 6, 7. Non-standard auxiliary plungers are Types 1, 8, 12, 34.
C. Pushbutton shields, see page 23.

Note: Special RFI shielded models available. Request details.

Ordering Example—

A. Basic Switch without mounting adapter: **C200 3 R**
Circuit. See (1).
Pushbutton type. See (2).
Pushbutton color. R—red. Omit if black.

B. Switches with mounting adapter: **C4100 P B 3 R**
Circuit. See (1).
Adapter Type. See (3A).
Adapter color. B—black, R—red. Omit if clear.
Aux. plunger type. See (3B).
Aux. plunger color. R—red. Omit if black.

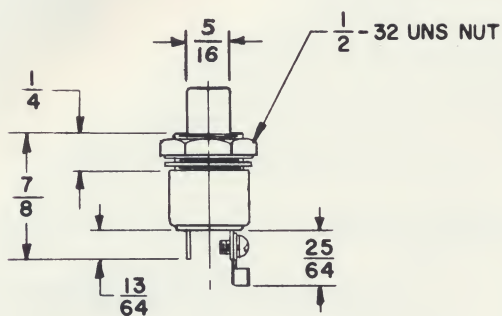
Momentary

10 amp. Resistive Rating

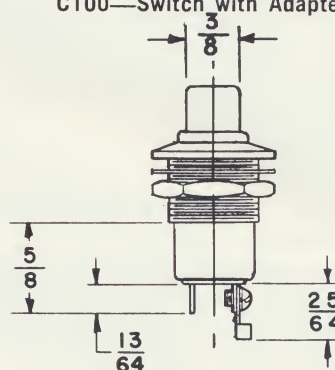
C100 SERIES



C100—Basic Switch



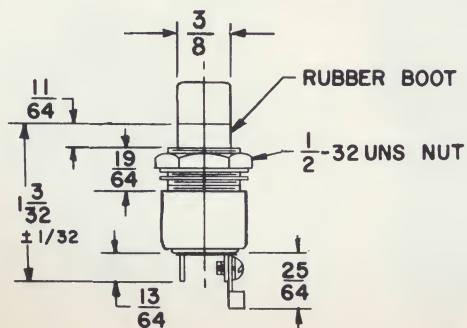
C100—Switch with Adapter



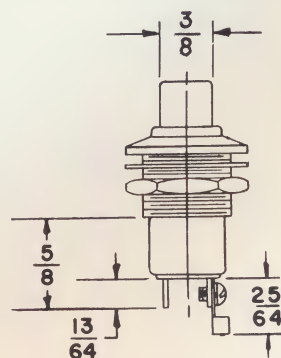
W100 SERIES



W100—Basic Switch



W100—Switch with Adapter



SWITCHES SHOWN ACTUAL SIZE

10 amp. Resistive Rating

Momentary, Moistureproof

W9000 SERIES—SWIVEL-ACTION BUTTON

W9600 SERIES—WIDE BUTTON

	SWIVEL-ACTION BUTTON	WIDE BUTTON WITH PANEL SEAL
SP-NO double break	W9001	W9601
SP-NC double break	W9002	W9602
(1) SPDT 2 circuit	W9003	W9603
SP-NO 3 terminal	W9004	W9604
SP-NC 3 terminal	W9005	W9605
SPDT double break	W9006	W9606

W9000 SERIES

- Action:** Momentary snap. Swivel action permits operating force to be applied to any point on surface of knob.
- Total Plunger Travel:** .085 in. approx.
- Operating Force:** 4 lbs. $\pm$ 1 lb.
- Weight:** .090 lb. approx.
- Mechanical Life, ops., min:** 25,000
- Electrical Ratings:** 10 amps res, 120 VAC/28 VDC (3 amps thru center terminals of (W9004 & W9005).
- Terminals:** Solder
- (2) **Pushbutton:** Gray painted aluminum alloy swivel knob standard. Black and red available.
- Basic switch conforms to:** MS25089
- Variations Available:** Black anodized aluminum mounting adapter.

Ordering Example:

Circuit. See (1). **W9001 B R**

Adapter color. B—black, C—clear.

Knob color. See (2). B—black, R—red. Omit if gray.

W9600 SERIES

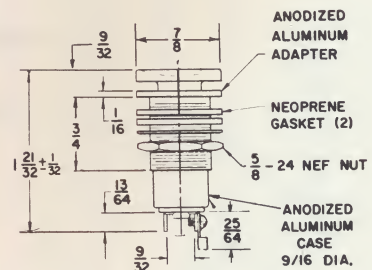
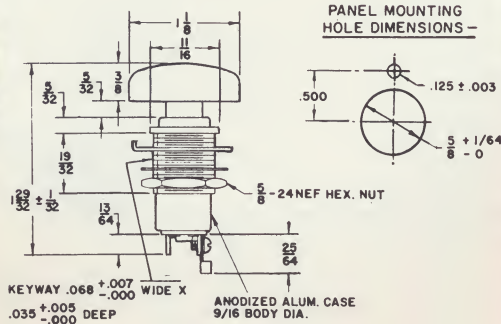
- Action:** Momentary snap
MOISTUREPROOF
- Total Plunger Travel:** .085 in. approx.
- Operating Force:** 4 lbs. $\pm$ 1 lb.
- Weight:** .050 lb. approx.
- Load Life, ops., min:** 25,000
- Electrical Ratings:** 10 amps res, 120 VAC/28 VDC (3 amps thru center terminals of W9604 & W9605).
- Terminals:** Solder
- Pushbutton:** Black plastic standard. Red available.
- Basic switch conforms to:** MS25089
- Variations Available:** Black anodized mounting adapters.
- Note:** Special RFI shielded models available. Request details.

Ordering Example:

Circuit. See (1). **W9603 B R**

Adapter color. B—black. Omit if clear.

Pushbutton color. R—red, B—black.



SWITCHES SHOWN ACTUAL SIZE

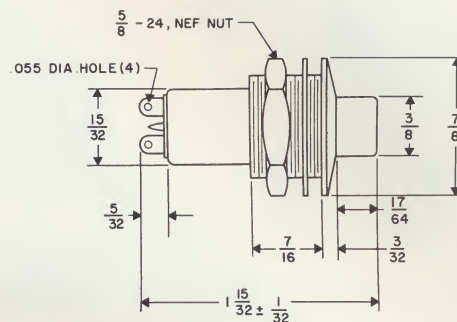
Maintained

10 amp. Resistive Rating

J4004—SPDT Push-Push, 2 circuit



Action: Alternate snap
Total Plunger Travel: .172 in. approx.
Operating Force: 3½ lbs. ± 1 lb.
Weight: .032 lbs. approx.
Mechanical Life, ops., min: 50,000
Electrical Ratings: 10 amps, 120 VAC or 28 VDC resistive
Terminals: Solder
Case: Clear anodized aluminum. Black anodized as Type J4004B. Gold anodized as Type J4004GO.
Pushbutton: Black plastic. For other colors, add color designation after complete part number. GY—gray. R—red. W—white.



J300 SERIES—MOISTUREPROOF



TYPE J333P6



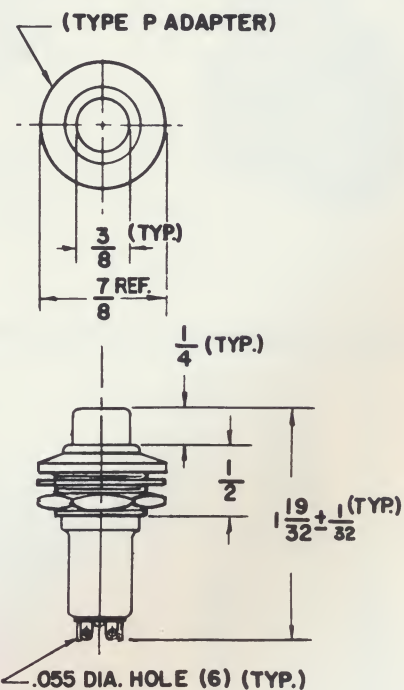
TYPE J333W6

- (1) J313—SPDT Push-Push, 2 circuit
 J333—DPDT Push-Push, single break

Action: Alternate snap
Total Plunger Travel: 13/64 in. approx.
Operating Force: 2¾ lb. ± 1 lb.
Weight: .030-.035 lb.
Load Life, ops., min: 25,000
Electrical Ratings—
 J313: 10 amps, 120 VAC or 28 VDC resistive
 J333: 1 amp, 120 VAC or 28 VDC resistive
Terminals: Solder
Pushbutton: Black plastic standard. Red available.
Moisture Proofing: Internal.
Pushbutton Shields: See page 23.
Switch Series
Conforms to: MS17974 or MS17975

- (2) Variations Available: A. Drawing shows Type P mounting adapter. Also available with Types M, N, PA, U, V, W, and Y adapters. See page 21. Adapters permanently bonded to switch to insure moistureproofing.
 B. Special RFI shielded models. Request details.

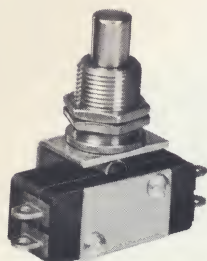
Ordering Example: J313 P B 6 R
 Circuit. See (1).
 Adapter type. See (2).
 Adapter color. B—black, R—red.
 Omit if clear.
 Pushbutton color. R—red. Omit if black.



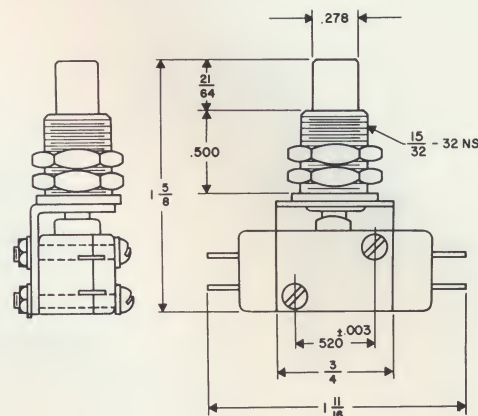
10-15 amp. Resistive Rating

Momentary

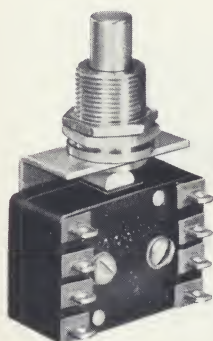
A4-1/S1-4—SPDT, 2 circuit



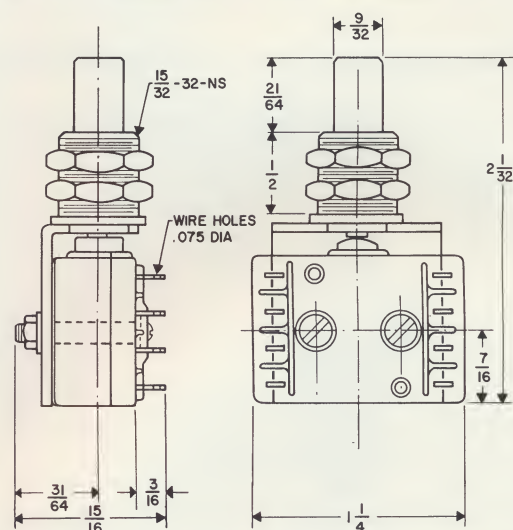
Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .187 in.
Movement Differential, max: .025 in.
Operating Force, max: 16 oz.
Overtravel Force, max: 5 lbs.
Release Force, min: 3 lbs.
Mechanical Life, ops., min: 500,000
Electrical Ratings: 10 amps, 125 VAC, UL Listed
 1 amp, 125 VAC, pilot duty
 10 amps, 30 VDC res.
Terminals: End solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Metal
Variations Available: Use any S series switch in Catalog 110.



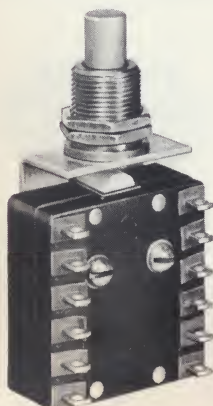
A4-2/D8-4—DPDT, 4 circuit



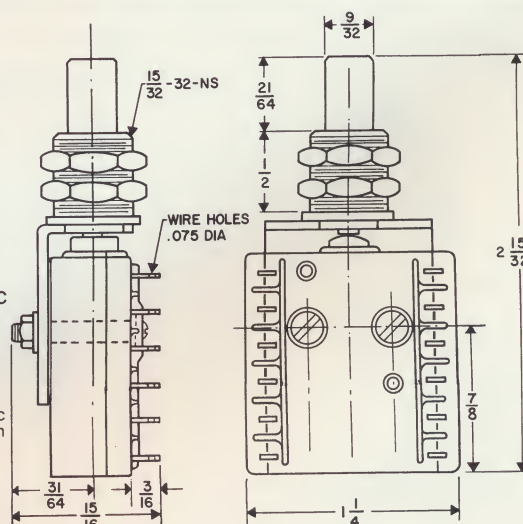
Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .187 in.
Movement Differential, max: .035 in.
Operating Force, max: 34 oz.
Release Force, min: 2 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 15 amps, 125/250 VAC
 15 amps, 30 VDC, res.
 10 amps, 30 VDC, ind.
Terminals: Side solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Metal
Variations Available: Use any D series switch in Catalog 110.



A4-2/K3-4—3PDT, 6 circuit



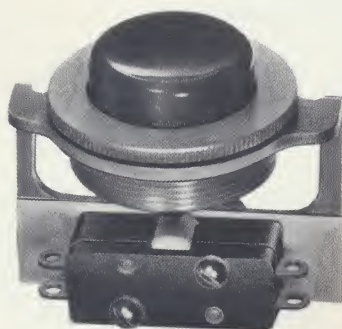
Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .187 in.
Movement Differential, max: .035 in.
Operating Force, max: 56 oz. approx.
Release Force, min: 6 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 15 amps, 125/250 VAC
 or 30 VDC resistive
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Metal
Variations Available: Use any K series basic switches shown in Catalog 110.



Momentary

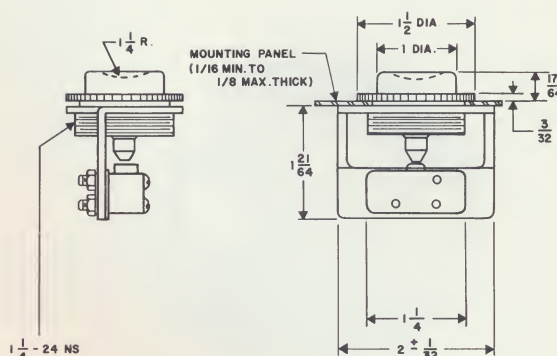
10-15 amp. Resistive Rating

A4-67/S1-21—SPDT, 2 circuit

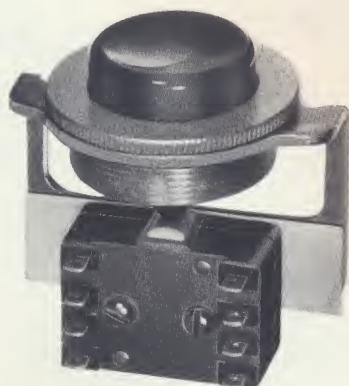


Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .015 in.
Movement Differential, max: .025 in.
Operating Force, max: 25 oz.
Release Force, min: 3 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 10 amps, 125 VAC, U.L. Listed.
 1 amp, 125 VAC, Pilot duty.
 10 amps, 28 VDC res.
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Black plastic. Red plastic as Type A4-67-1/S1-21. Green plastic as Type A4-67-2/S1-21.

Variations Available: Use any S series basic switch from Catalog 110.

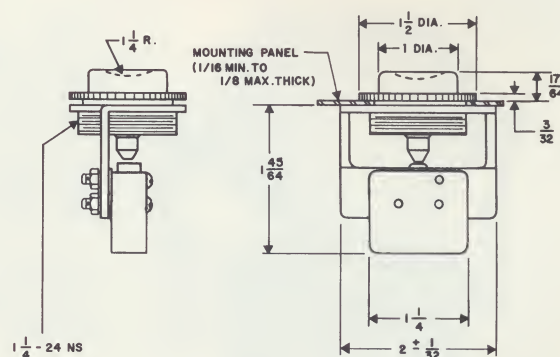


A4-67/D8-4—DPDT, 4 circuit



Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .018 in.
Movement Differential, max: .035 in.
Operating Force, max: 34 oz.
Release Force, min: 3 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 15 amps, 125/250 VAC or 15 amps, 30 VDC, res.
 10 amps, 30 VDC, ind.
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Black plastic. Red plastic as Type A4-67-1/D8-4. Green plastic as Type A4-67-2/D8-4.

Variations Available: Use any D series basic switch from Catalog 110.

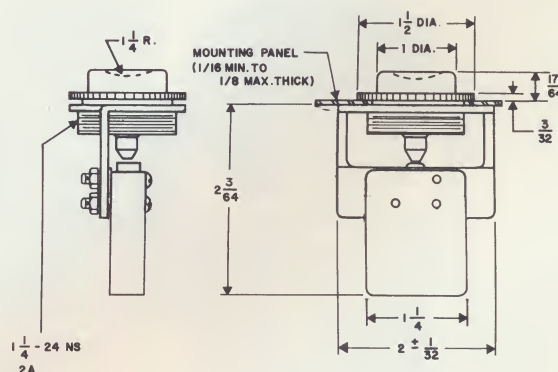


A4-67/K3-4—3DPT, 6 circuit



Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .015 in.
Movement Differential, max: .035 in.
Operating Force, max: 56 oz.
Release Force, min: 3 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 15 amps, 125/250 VAC or 30 VDC resistive
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Black plastic. Red plastic as Type A4-67-1/K3-4. Green plastic as Type A4-67-2/K3-4.

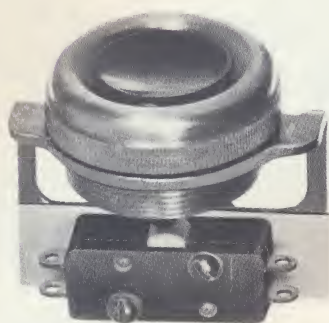
Variations Available: Use any K series basic switch from Catalog 110.



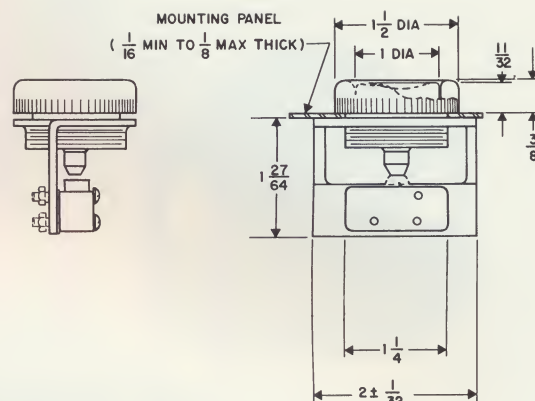
10-15 amp. Resistive Rating

Momentary

A4-102/S1-21—SPDT, 2 circuit



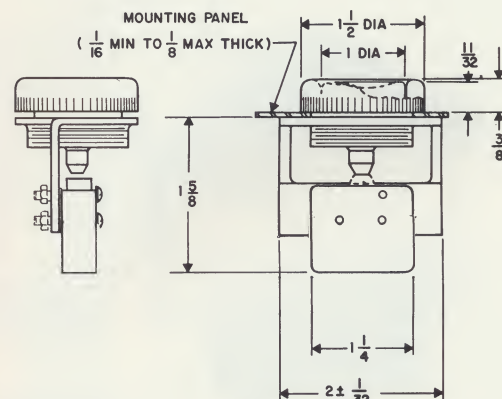
Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .015 in.
Movement Differential, max: .025 in.
Operating Force, max: 25 oz.
Release Force, min: 3 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 10 amps, 125 VAC, U.L. Listed.
 1 amp, 125 VAC, Pilot duty.
 10 amps, 30 VDC, res.
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Red plastic. Black plastic as Type A4-102-1/S1-21. Green plastic as Type A4-102-2/S1-21.



A4-102/D8-4—DPDT, 4 circuit



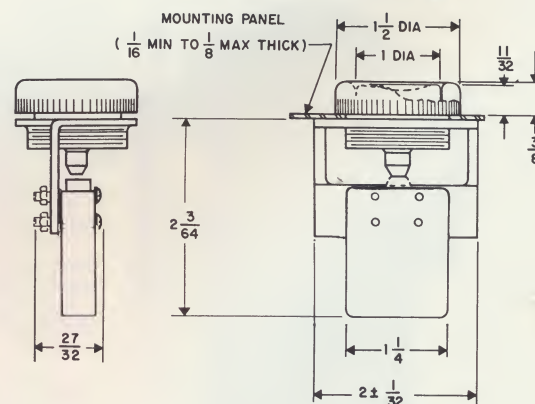
Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .018 in.
Movement Differential, max: .035 in.
Operating Force, max: 34 oz.
Release Force, min: 3 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 15 amps, 125/250 VAC
 15 amps, 30 VDC res.
 10 amps, 30 VDC ind.
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Red plastic. Black plastic as Type A4-102-1/D8-4. Green plastic as Type A4-102-2/D8-4.
Variations Available: Use any D series basic switch from Catalog 110.



A4-102/K3-4—3PDT, 6 circuit



Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .015 in.
Movement Differential, max: .035 in.
Operating Force, max: 56 oz.
Release Force, min: 6 oz.
Mechanical Life, ops., min: 150,000
Electrical Ratings: 15 amps, 125/250 VAC
 or 30 VDC res.
Terminals: Solder
Ambient Temperature Range: -54° to +121°C
Pushbutton: Red plastic. Black plastic as Type A4-102-1/K3-4. Green plastic as Type A4-102-2/K3-4.
Variations Available: Use any K series basic switch from Catalog 110.



Momentary

15 amp. Resistive Rating

H2200 SERIES

H2211—DP-NO, double break

(1) **H2222**—DP-NC, double break

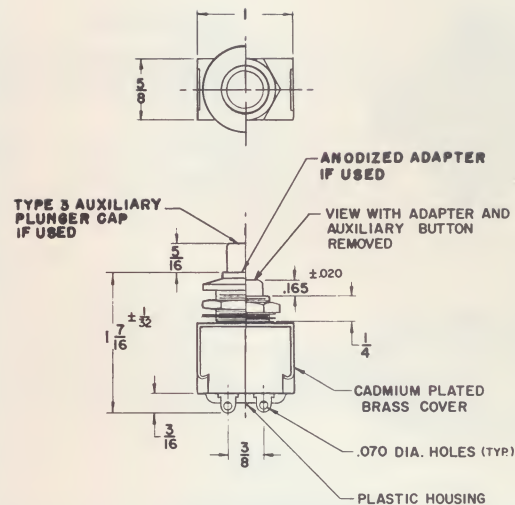
H2266—DPDT, double break

Action: Momentary snap
Operating Force: 3 lb. $\pm$ 1 lb.
Weight: .05 lb approx. (basic switch)
Electrical Ratings: 10 amps ind., 120 VAC or 28 VDC
Terminals: Solder
Pushbutton: Black plastic Type 2 standard. Red available.
Pushbutton Shields: See page 23.
Mounting: When mounting adapters are not used, basic switch is supplied with 1/2-32 NS-2B nut & lock-washer.

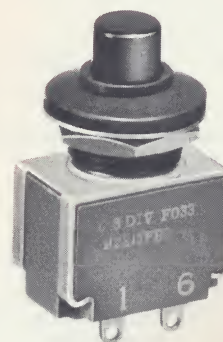
(2) **Variations Available:** Optional mounting adapter Types P, PA, U, W shown on page 21. Adapters available with Types 2, 3 or 4 auxiliary plunger caps as shown on page 20.

Ordering Example:

- A. Basic switch without mounting adapter:**
Circuit. See (1). _____ **H2211 R**
Pushbutton color. R—red. Omit if black. _____
- B. Switch with mounting adapter:**
Circuit. See (1). _____ **H2266 P B 3 R**
Adapter type. See (2). _____
Adapter color. B—black. Omit if clear. _____
Aux. plunger type. See (2). _____
Aux. plunger color. R—red. Omit if black. _____



TYPE H2266



TYPE H2211PB3

SWITCHES SHOWN ACTUAL SIZE

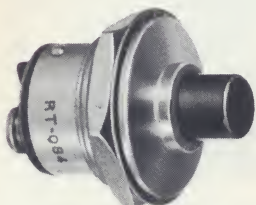
35 amp. Resistive Rating

Momentary

D200 SERIES



TYPE D201W3



TYPE D201P3



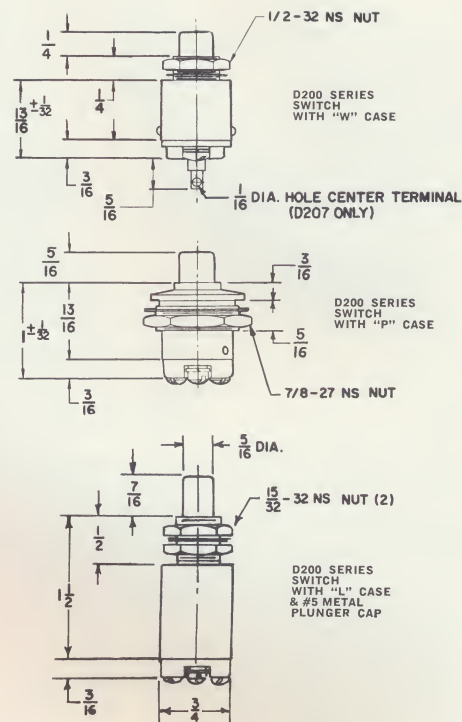
TYPE D201L5

- (1) D201—SP-NO, double break / 35 amps, res, 28 VDC
D202—SP-NC, double break / 20 amps, ind, 120 VAC
D203—SPDT, 2 circuit
D204—SP-NO, 3 terminal / 15 amps, res/ind
D205—SP-NC, 3 terminal / 120 VAC/28 VDC
D207—SP-NO, 4 terminal / 10 amps, res/in, 120
VAC/28 VDC (3 amps
max. thru center term).

Action: Momentary snap
Total Plunger Travel: .085 in. approx (.4375 in. with #5 pushbutton.)
Operating Force: 4 lbs. $\pm$ 1 lb.
Weight: .04-.06 lb.
Load Life, ops., min: 25,000
Terminals: End screw. (Solder, center terminal)
Pushbutton: Black plastic standard.
Pushbutton shields: See page 23.

- (2) Variations Available: Color anodized cases. See color lists on page 22 and add color designation after Type number. Black plunger standard. Red and white available.

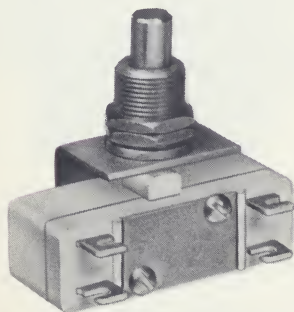
Ordering Example: D202 P B 3 R
Circuit. See (1).
Case type. See drawings.
Case color from page 22. Omit if clear.
Pushbutton type. See (2).
Pushbutton color. R—red, W—white. Omit if black.



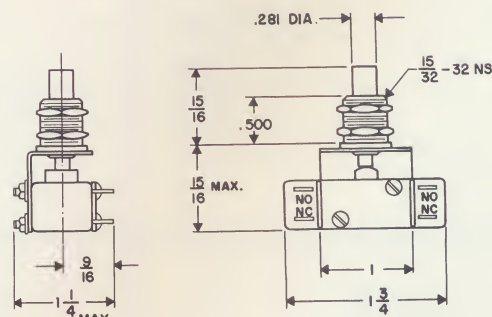
40 amp. Resistive Rating

Momentary

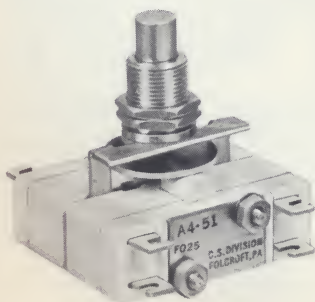
A4-50/G3-8—SPDT, 2 circuit



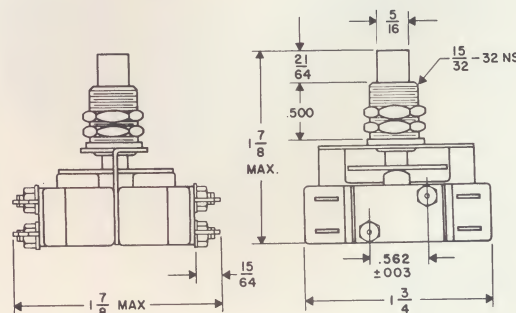
Action: Momentary snap
Pretravel, max: .187 in.
Overtravel, min: .125 in.
Movement Differential, max: .065 in.
Operating Force, max: 3 1/2 lbs.
Overtravel Force, max: 9 lbs.
Release Force, min: 4 oz.
Mechanical Life, ops., min: 50,000
Electrical Ratings: 40 amps, 125/250 VAC
40 amps, 30 VDC, Res.
30 amps, 30 VDC, Ind.
Terminals: Solder
Ambient Temperature Range: -54° to +71°C
Variations Available: Use any G3 Series switch in Catalog 110.



A4-51—DPDT, 4 circuit



Action: Momentary snap
Pretravel, max: .093 in.
Overtravel, min: .093 in.
Movement Differential, max: .065 in.
Operating Force, max: 6 lbs.
Released Force, min: 10 oz.
Mechanical Life, ops., min: 50,000
Electrical Ratings: 40 amps, 125/250 VAC or 30 VDC resistive
Terminals: Solder
Ambient Temperature Range: -54° to +71°C
Pushbutton: Metal



SWITCHES SHOWN ACTUAL SIZE

Optional Plastic Pushbuttons (Plunger Caps) for Basic Switches

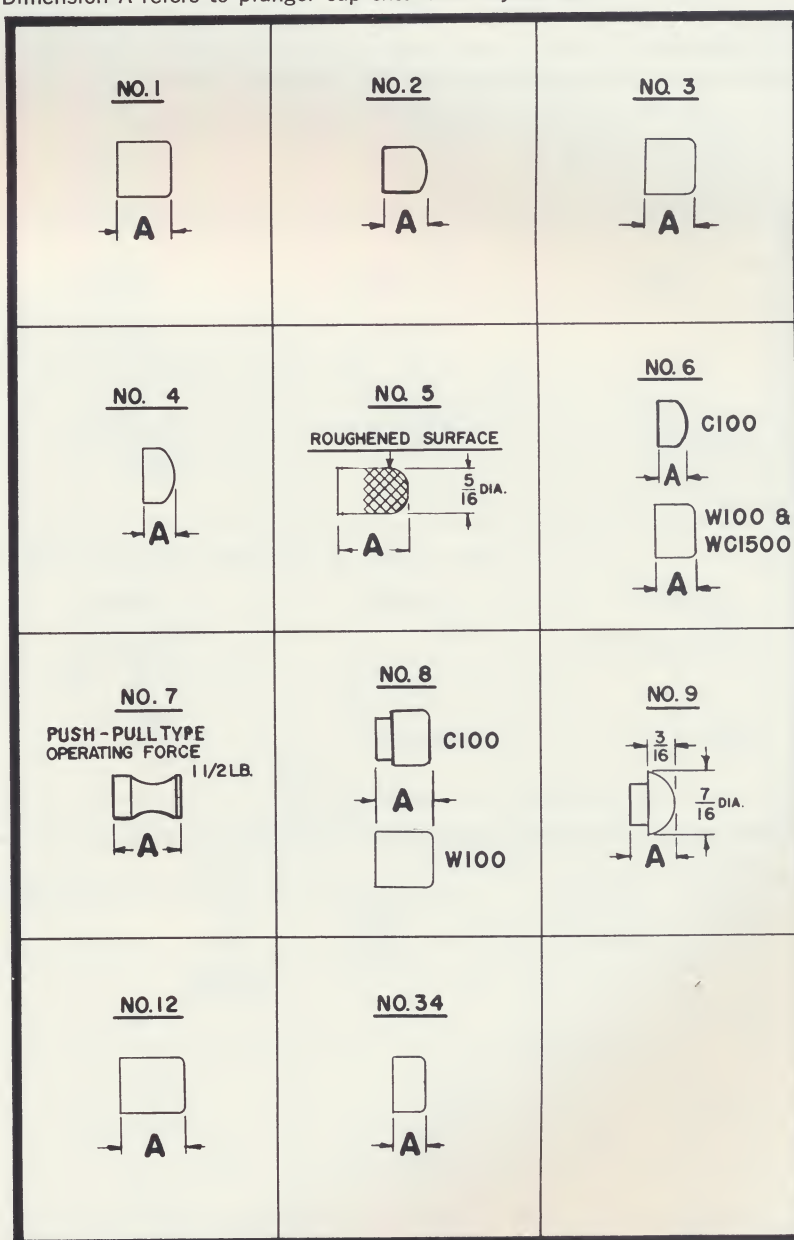
when not using mounting adapters.

COLORS: Black standard. Red, green, and white available in some models. See individual listings.

AVAILABILITY: Not all plunger caps shown are standard. Consult "Pushbutton" data under each switch for availability.

Dimension A refers to plunger cap extension beyond case

PUSHBUTTON TYPE NO.	DIMENSION "A"	
	C100 Switches	W100 & WC1500 Switches
1	NA	3/8
2	5/16	11/32
3	5/16	11/32
4	NA	7/32
5	7/16	NA
6	3/16	9/32
7	15/32	13/32 [†]
8	3/8	13/32
9	5/16	NA
12	NA	29/64*
34	NA	7/32
NA = Not available on this series. * 15/32 on WC1500. † W100 Series only.		



Auxiliary Pushbuttons (Plunger Caps) for use with Mounting Adapters

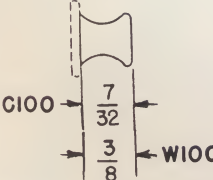
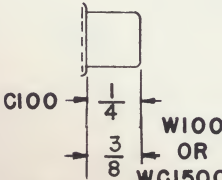
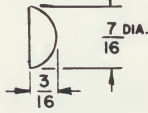
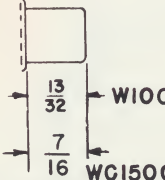
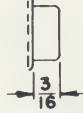
for Series C100, W100, WC1500, and H2200 when using mounting adapters

COLORS: Black standard. Red, green, and white available in some models. See individual listings.

AVAILABILITY: Not every plunger can be used with all adapters or with all switches. See "Variations Available" under each switch and also "Optional Mounting Adapters" on pages 21 & 22 for availability.

CAP LENGTHS: Plunger cap extensions shown are for $\frac{1}{2}$ " long adapters. Extension varies with other adapter lengths.

MATERIAL: Plastic except Types 5, 51, and 53 which are chrome-plated or anodized metal.

<u>NO. 1</u> 	<u>NO. 2</u> 	<u>NO. 3</u> 	<u>NO. 4</u> 	<u>NO. 6</u> 		
<u>NO. 7</u> 	Use with "B" adapter only on C100 <u>NO. 8</u> 			<u>NO. 9</u> 	<u>NO. 12</u> 	<u>NO. 34</u> 

Types 5, 51, 52, 53—see Mounting Adapter Types L and LA, page 21.

Optional Mounting Adapters

for Series C100, J300, W100, WC1500, and H2200 Switch

COLORS: See table on next page. Add color designation after adapter type designation.

MATERIAL: Anodized aluminum alloy with non-corrosive mounting hardware.

AVAILABILITY: Not every adapter can be used on all switches. Refer to basic switch data for availability.

ADAPTER LENGTHS: 1/2 in. overall except as noted.

THREADS: 5/8-24 NEF-2B, except as noted.

TYPE A	TYPE AC SUPPLIED WITH LOCKWASHER	TYPE AD	TYPE AE	TYPE B FOR USE WITH #8 & #9 CAPS ONLY
TYPE C3 OPERATING FORCE 3-6 LBS.	TYPE D	TYPE DA	TYPE E	TYPE F
TYPE G	TYPE GA	TYPE GC	TYPE GD	TYPE H
TYPE J	TYPE K	TYPE "L" ADAPTER WITH #5, #51, OR #52 PLUNGER CAP SUPPLIED AS A UNIT WITH ANY BASIC SWITCH PLGR. CAP COLORS:- CHROME, NO LETTER ANOD. (RED, R ALUM. (BLACK, B DIM. "A" WITH #5 CAP - 7/16 #51 CAP - 1 1/2 #52 CAP - 5/16		
TYPE "LA" ADAPTER WITH #5 PLUNGER CAP SUPPLIED AS A UNIT WITH ANY BASIC SWITCH PLGR. CAP COLORS:- CHROME, NO LETTER ANOD. (RED, R ALUM. (BLACK, B TOTAL PLUNGER TRAVEL 5/16 APPROX. OVERTRAVEL 1/8 APPROX.		TYPE M	TYPE MA	TYPE MC

Continued next page.

MOUNTING ADAPTERS—continued from page 21

TYPE N	TYPE NA	TYPE P	TYPE PA	TYPE PAK
TYPE PD	TYPE PL	TYPE Q	TYPE R	TYPE S
TYPE T	TYPE U	TYPE V	TYPE W	TYPE WA
TYPE X	TYPE Y	TYPE Z		

MOUNTING ADAPTER and PUSHBUTTON SHIELD ANODIZED COLORS

Add Type letter after adapter and/or plunger guard type number.

COLOR	TYPE LETTER
Clear	no letter
Black	B
Red	R

Threaded Pushbutton Shields

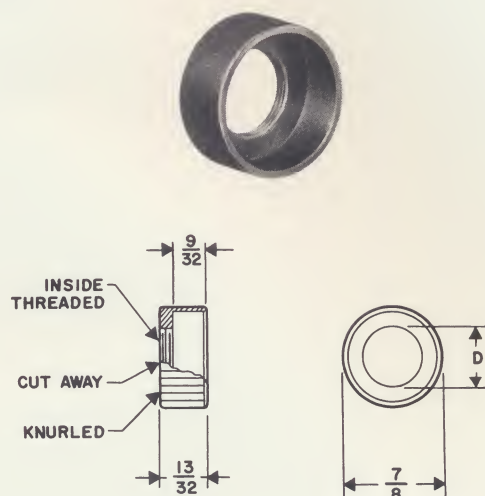
for Series C100, D200W, H2200, J300, W100, and WC1500 Switches

These anodized aluminum shields guard pushbuttons against accidental operation. Internally threaded, the shields are usually used on basic switches in place of mounting adapters although Type W or other narrow adapters can be used with

shields. Consult switch and adapter drawings for proper thread size when ordering shields. Order shields, separately by part number.

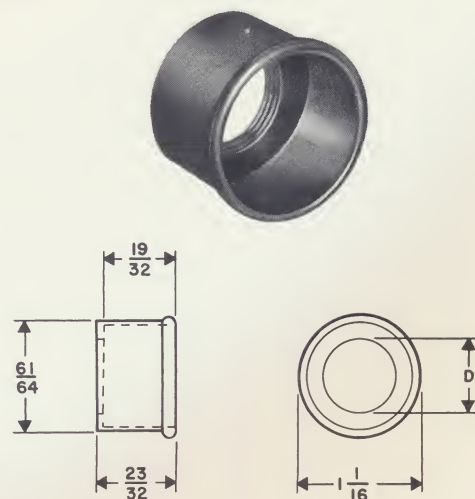
KNURLED SHIELDS

PART NUMBER	ANODIZED COLOR	THREAD SIZE (Dimension D)
A120 016	Clear	1/2-32 NS-2B
A120 017	Black	"
A120 018	Red	"
A120 081	Clear	5/8-24 NEF-2B
A120 082	Black	"
A12Q 083	Red	"



ROLLED EDGE SHIELDS

PART NUMBER	ANODIZED COLOR	THREAD SIZE (Dimension D)
A120 260	Clear	1/2-32 NS-2B
A120 261	Black	"
A120 262	Red	"
A120 127	Clear	5/8-24 NEF-2B
A120 128	Black	"
A120 129	Red	"





For detailed information on other products, write for
any of the catalogs shown above.
Also see our listing in EEM, sec. 3900 & sec. 5100



QUADLITE

***New Four-Color
Lighted Push-Button
Panel Switch***

Actual Size

CONTROLS COMPANY  OF AMERICA
CONTROL SWITCH DIVISION
1420 Delmar Drive • Folcroft, Pa. 19032
TELEPHONE: 215-586-7500 • TWX 510-669-2136

Manufacturers of a full line of switches, controls and indicators for all military and commercial applications. All standard units stocked for immediate delivery by leading parts Distributors.



QUADLITE... a switch ... four lamps ...

... ALL IN ONE COMPACT

CUTS SPACE REQUIREMENTS 50% TO 80%

QUADLITE can give as many as nine different status indications and monitor four separate circuits in a space only $\frac{7}{8}$ -inch square! In addition, it performs a control function when the push-button actuator is depressed. By using QUADLITES, panels can be compressed 50% to 80% in size... whole banks of separate pilot lights, push-button and toggle switches can be eliminated... and operation greatly simplified.

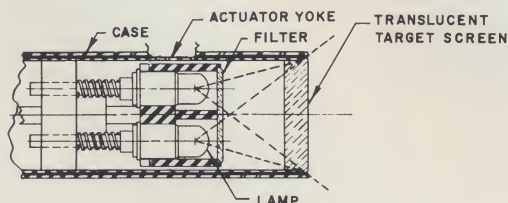
HUMAN ENGINEERED

This switch combines indication and control within one element. Thus, an operator pushes the lighted button surface that calls for action. This reduces chance of human error by eliminating the need to mentally relate controls to separate indicators. The $\frac{3}{4}$ -inch square push-button area, the total switch travel ($\frac{3}{16}$ -inch) and the positive "feel" of actuation are all features carefully tailored to human engineering recommendations.

Push-button recesses within case to prevent accidental actuation of more than one switch in multiple mountings.

REMOVABLE LAMP MODULE

Lamps for this switch are mounted in a module that is removable from the front of the panel. Modules are indexed to insure proper placement, and may also be keyed so that they cannot be mistakenly interchanged with different color combinations used in the same panel. A filter on the front of the module can carry as many as four different colors to be projected individually onto the push-button target screen. Alternate halves of the target screen can be illuminated through the use of a light divider in the center of the push-button.



MODELS AND MOUNTINGS

QUADLITE is available either as a switch or as a pilot light. Two switching actions are available: alternate action (push on, push off) and momentary, positive feel action. Standard units may be furnished for flange, barrier or matrix mounting. Special models are also available for sub-panel mounting. Special custom modifications can be devised to meet your own particular requirements. A complete matrix consisting of any number of QUADLITE units can be furnished as a pre-assembled component ready for installation on your panel.

CHOICE OF COLORS

Lamp module may be furnished with any *four* of the following filter colors.

Blue	Red
Green	Yellow
Orange	White (clear)

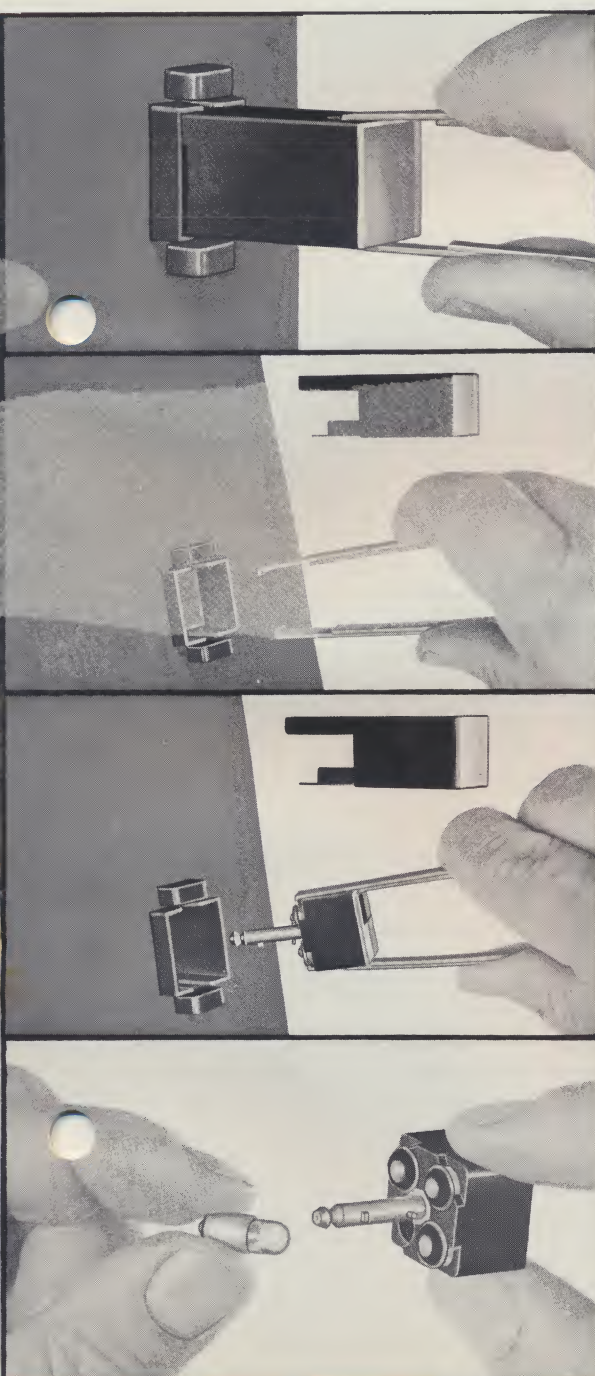
These colors have been selected on the basis of Human Factor recommendations. Under high ambient light conditions, and where four different colors are not needed, a color can be repeated in more than one position of the module surface. Thus the light intensity can be increased by simultaneous lighting of each of the identical colors. Another important advantage with two lamps projecting the same color is increased protection against lamp failure. The target screen on the push-button can be furnished with translucent or clear colors or white, and with either a plain or split button. The split button permits part of the button to be illuminated while the other part remains dark or is lighted with a different color. Legends in any color may be applied to the front or underside of the button.

QUADLITE is a Trade Mark



... and a push-button

ASSEMBLY!



RE-LAMPABLE FROM THE FRONT!

It takes less than a minute to change all four lamps in a QUADLITE. It's all done from the front using just one simple tool. Special maintenance skills are not necessary and there's no need to disturb wiring.

1. Remove actuator yoke with tool.
2. Reach in with same tool to grasp module.
3. Pull module out.
4. Change lamps.

Module and yoke are slipped back into place without tool.

NOTE: Models are now available which can be re-lamped without any tool

QUADLITE ELECTRICAL DETAILS

Basic switches used in QUADLITES conform to MS 25085-1 with exception of terminals.

SWITCH CHARACTERISTICS

Contact Arrangement . . . 2 - S.P.D.T.
(non-simultaneous)
Total Travel 3/16-inch
Ambient temp.
range —65° to 150° F.

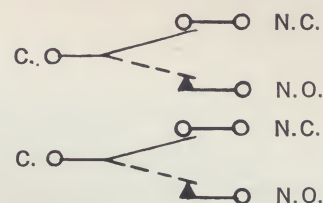
Solenoid-held models available with 2, 3 or 4-pole, double throw switching, and momentary positive-feel actuation. Solenoids available for 6, 12 and 28 volts D.C.

SWITCH ELECTRICAL RATING

125/250 V.A.C. 5 amps
30 V.D.C. resistive 4.0 amps
30 V.D.C. inductive 2.5 amps

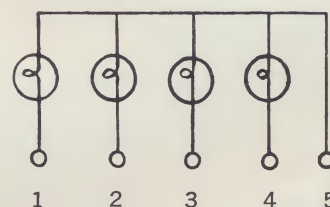
SWITCH CIRCUIT

COMMON



LAMP CIRCUIT

COMMON (brown)



All lamp terminals are insulated from the assembly and are independent of the switches.

Module accepts four MS 25237-327 (28-volt) or MS 25237-328 (6 volt) lamps.

These lamps draw only 40 ma at 28 volts. Due to the design of the QUADLITE module, they produce as much usable light at the front panel as may be realized from the conventional 100 or 150 ma, 28 volt lamps. The QUADLITE unit is furnished without bulbs.

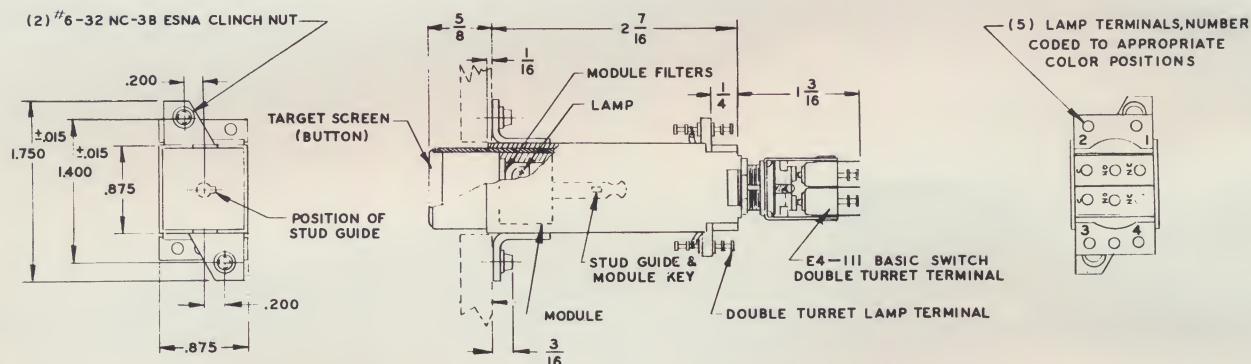
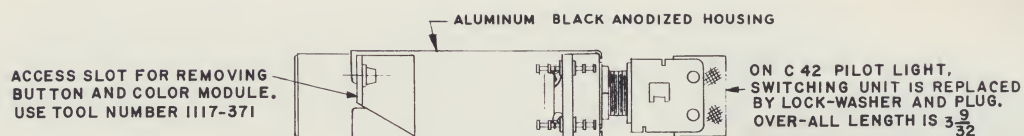
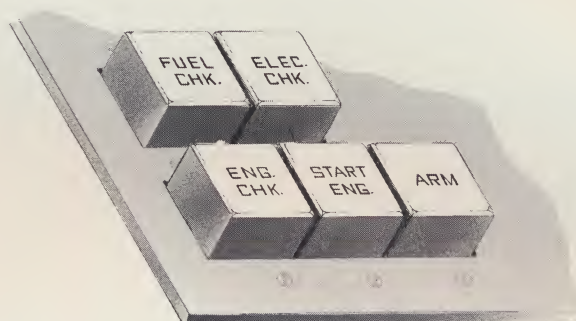
flange mounting

QUADLITE MODELS

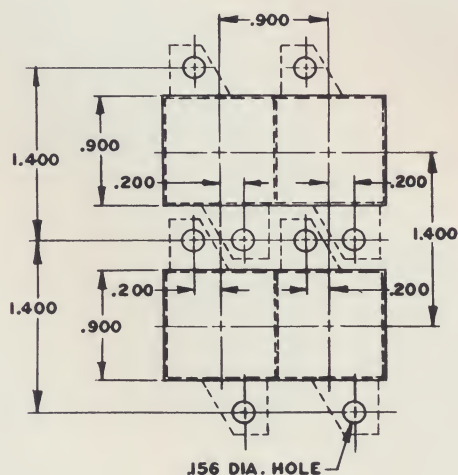
Model C 40
Alternate Switching Action

Model C 41
Momentary (positive-feel) Switching Action

Model C 42
Pilot Light



PANEL CUT-OUT FOR MINIMUM STACKING



NON-STANDARD VARIATIONS AVAILABLE

Special lighting feature: half of target screen lights up while other side remains dark or is lighted with different color. A light divider is furnished when specified for this purpose.

MODULE KEYING. A universal stud guide is supplied on each module as standard. Special keying to prevent accidental interchange of color modules may be supplied at no extra cost.



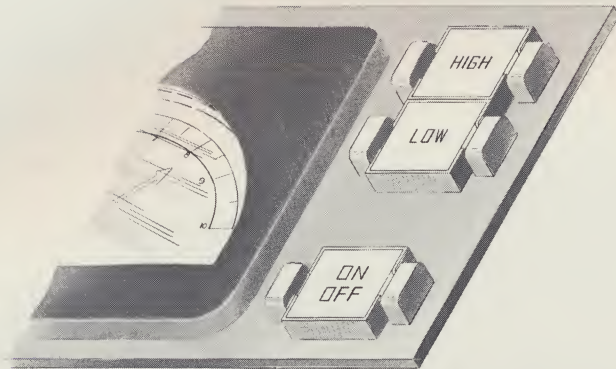
Model C 45
Alternate Switching Action

Model C 46
Momentary (positive-feel) Switching Action

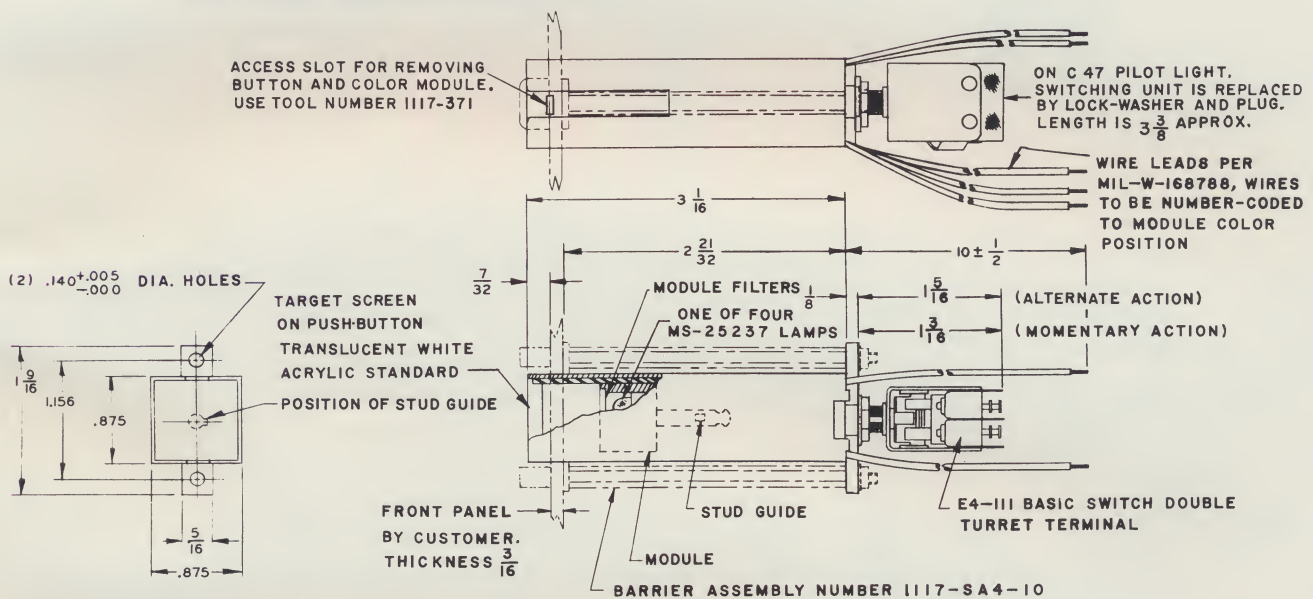
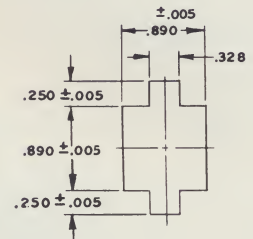
Model C 47
Pilot Light

barrier mounting

QUADLITE MODELS



RECOMMENDED
PANEL CUT-OUT



HOW TO ORDER QUADLITE MODELS ON THESE PAGES

Specify:

1. MOUNTING AND SWITCH ACTION

Flange mounting models

- C 40—Alternate Switching Action
- C 41—Momentary Switching Action
- C 42—Pilot Light

Barrier Mounting Models

- C 45—Alternate Switching Action
- C 46—Momentary Switching Action
- C 47—Pilot Light

2. TARGET SCREEN

Standard: Translucent acrylic white. Clear also available.
Screen may be divided into 2, 3 or 4 individually lighted areas.

3. MODULE

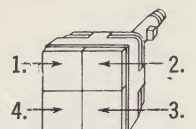
Specify filter colors desired, and sequence on face of each lamp module using numbering system at right:

Colors Available

Red	Yellow
Green	Orange
Blue	White (clear)

Example:

position No. 1—Red
position No. 2—Green
position No. 3—Red
position No. 4—Yellow

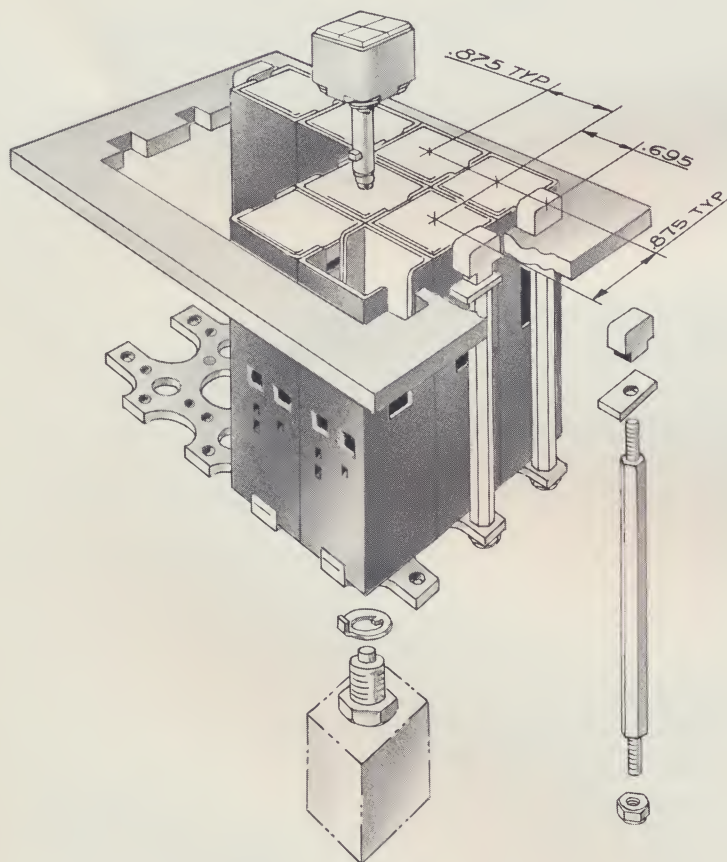
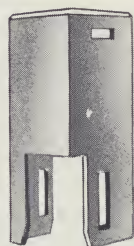
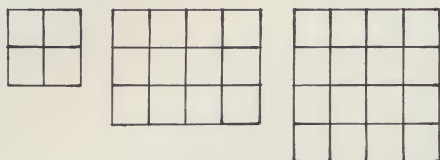


4. BARRIERS

Order two No. 1117-SA4-10 barriers for each C 45, 46 or 47 QUADLITE on order. Units do not share common barrier.

matrix mounting

QUADLITE MODEL C 50



QUADLITE "BUILDING BLOCKS" may be assembled into a wide variety of matrix combinations. We are able to build a complete matrix to your specifications. Write for full details, enclosing information on your requirements. If you wish to build your own matrix, we are able to furnish the following separate parts ready for assembly into a panel.

1. QUADLITE C 50 Body Unit (includes four-color light module).
2. Switch or Pilot Light Plug Assembly.
3. Barrier Assembly.

You will also need the following — *not furnished with basic body unit.*

1. Front Panel to be furnished by customer. See drawing for dimensions.
2. Switch Mounting Plate to be furnished by customer. See drawing for dimensions.

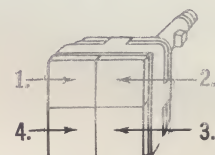
HOW TO ORDER C 50 BODY UNITS

1. Order one C 50 body unit for each switch and pilot light in matrix.
2. Standard target screen: translucent acrylic white. Clear also available.
3. Specify colors desired and sequence on module face using number system at right:

COLORS AVAILABLE

Red	Blue
Green	Orange
Yellow	White (clear)

Example: position No. 1—Red
position No. 2—Green
position No. 3—Red
position No. 4—Blue



HOW TO ORDER SWITCHES

1. Specify action

Alternate Action
A4-217-133

Momentary Action
A4-216-133

Other actions available
on request.

ORDERING PILOT LIGHTS ONLY

1. Specify body unit.
2. Order one No. 1117-SA14-2 plug assembly for each body.

HOW TO ORDER BARRIER ASSEMBLIES

1. Order two No. 1117-SA4-10 assemblies for each row of body units.

LAMP MODULE REMOVAL TOOL

Removal tools are not supplied with switches and must be ordered separately. Order Removal Tool No. 1117-371.

NON-STANDARD VARIATIONS AVAILABLE :

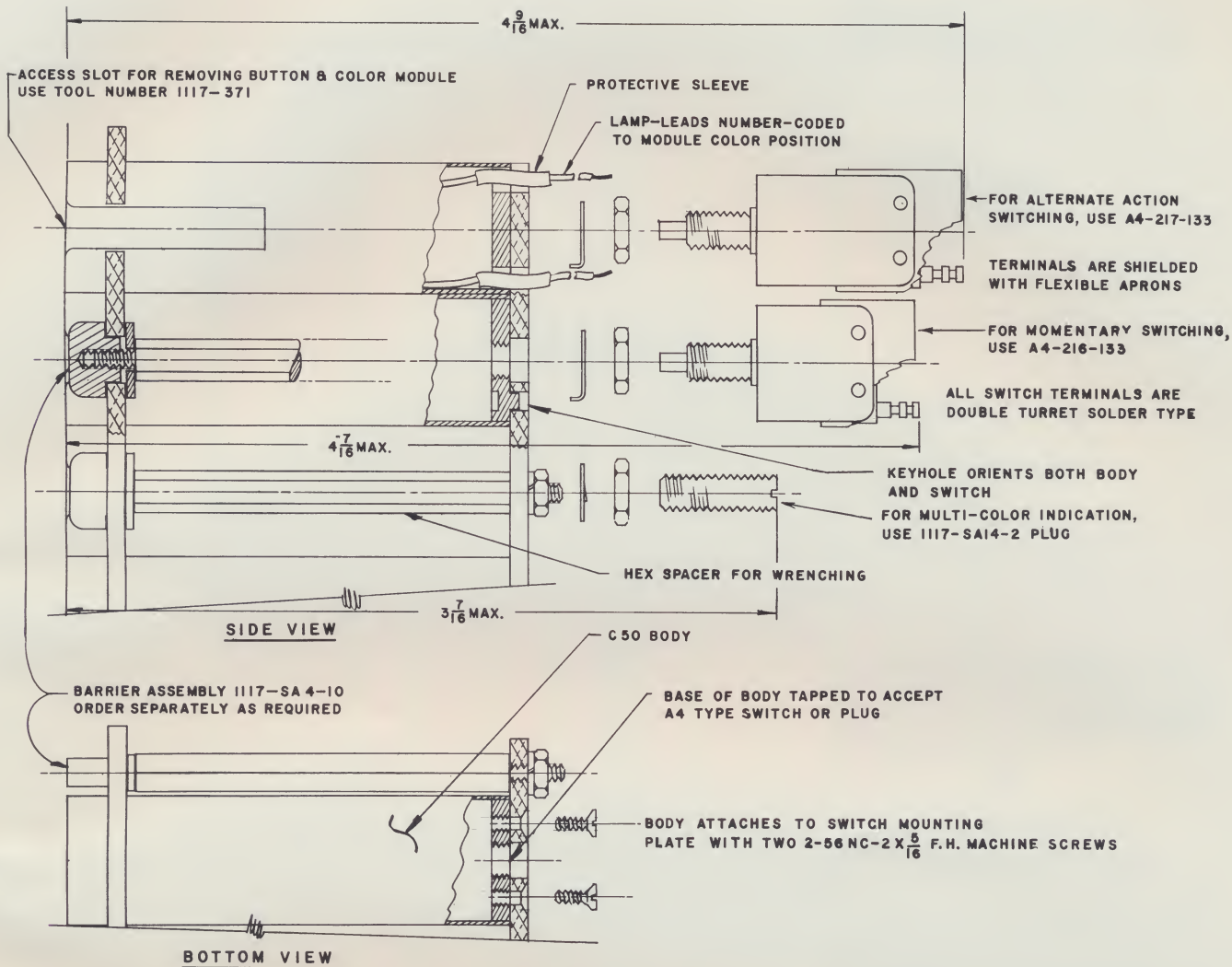
Special lighting feature: half of target screen lights up while other side remains dark or is lighted with different color. A light divider is furnished when specified for this purpose.

MODULE KEYING

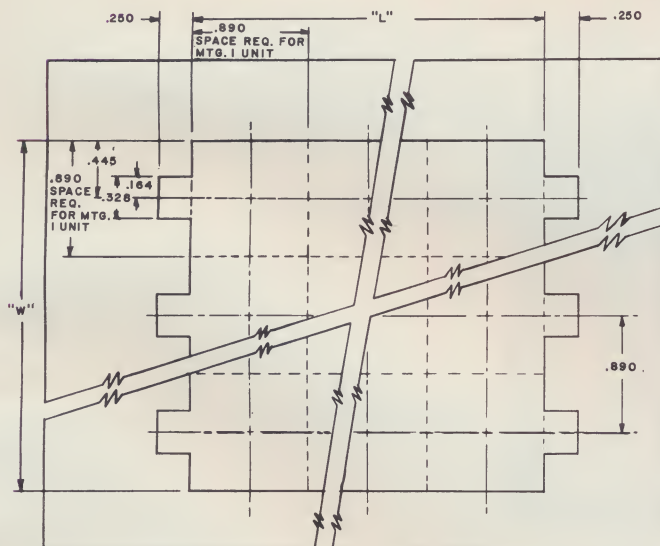
A universal stud guide is supplied on each module as standard. Special keying to prevent accidental interchange of color modules may be supplied at no extra cost.



Stud Guide



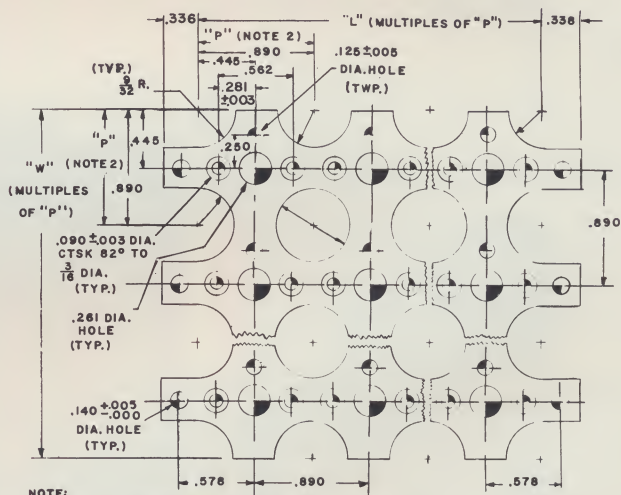
FRONT PANEL CUT-OUT



"L" = NUMBER OF UNITS REQ. X .890 $\pm$.005
PANEL THK. : $\frac{3}{16} \pm \frac{1}{8}$

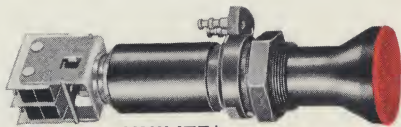
"W" = NUMBER OF UNITS REQ. X .890 $\pm$.005

SWITCH MOUNTING PLATE



NOTE:

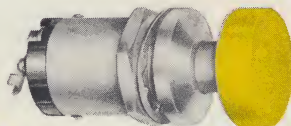
1. TOL. UNLESS OTHERWISE SPECIFIED DECIMAL $\pm$.005
FRACTION $\pm$.010
2. P² = AREA REQUIRED TO MOUNT ONE C50 UNIT ON SWITCH MTG. PLATE



UNILITE*
Lights in one color. One lamp. 1" diameter round button.



TWINLITE*
Lights in two colors. Two lamps. Solid or split-color button $\frac{3}{4}$ " x 1". Mounts in rows using barriers.



SWITCHLITE*
Lights in one color. 8 basic models, 5 styles of plastic buttons of $\frac{5}{8}$ " or $\frac{7}{8}$ " diameter.



TREYLITE*
Lights in three colors. Three lamps. Round button is 1" in diameter.



QUADLITE*
Lights in four colors. Four lamps. Mounts in matrix on $\frac{7}{8}$ " centers, both directions. Also individual flange and barrier mounting.

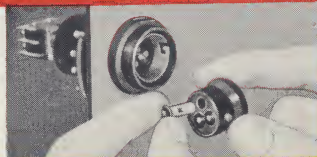
CHANGE LAMPS IN THREE EASY STEPS



1. Pull out push-button actuator.



2. Pull out lamp module.



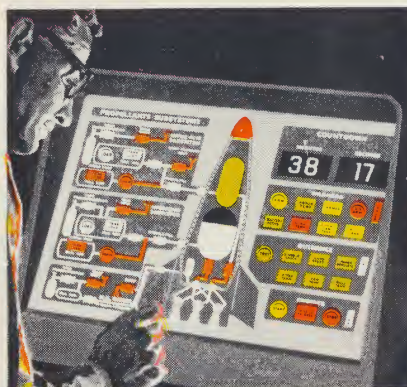
3. Replace lamp.

Form 54-B—HPB5M366

RE-LAMP FROM FRONT OF PANEL

*Select from the only complete line of
lighted push-button panel switches
you can re-lamp from the front*

Each of these five types of lighted push-button switches provide both monitoring and switching functions in one compact unit. Each can be quickly and easily re-lamped from the front of the mounting panel. You can change lamps in seconds without disturbing the mounting or the wiring. Re-lamping is this easy: simply pull out the actuator button . . . then reach in and remove the lamps. In some models, the lamps are contained in a separate lamp module which may be readily removed.



MOST EFFICIENT LINK BETWEEN MIND AND MACHINES

Revolutionary ASTROMATIC panel concept simplifies and reduces complex monitoring and control centers to small, efficient, pictorial lighted panels. ASTROMATIC control panels are made possible by Electrosnap's complete line of lighted push-buttons, switches, indicators, and other unique panel components. Electrosnap supplies components or complete panels. Ask about ASTROMATIC.

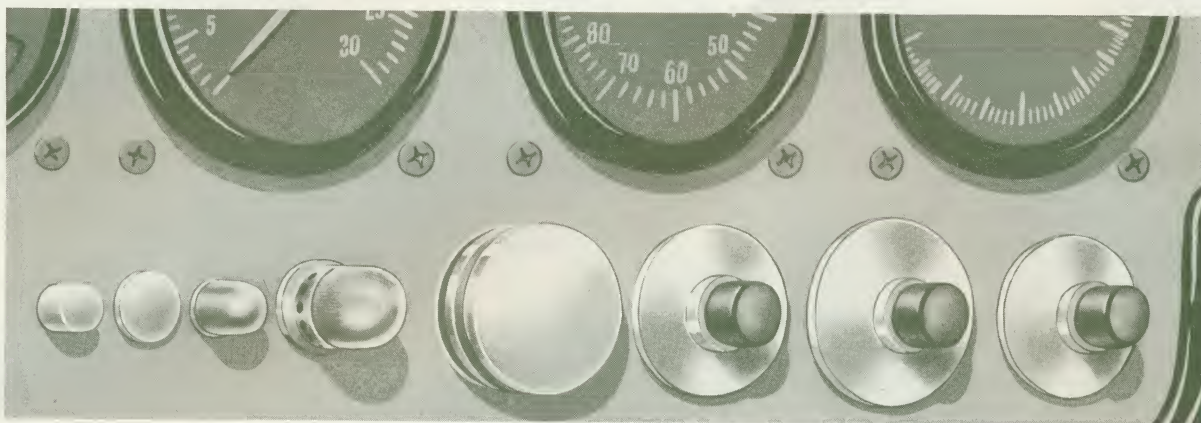
Get all the facts. Write for complete detailed technical literature on these distinctive front-lamping push-button switches.

CONTROLS COMPANY OF AMERICA
CONTROL SWITCH DIVISION
1420 Delmar Drive • Folcroft, Pa. 19032
TELEPHONE: 215-586-7500 • TWX 510-669-2136

Manufacturers of a full line of switches, controls and indicators for all military and commercial applications. All standard units stocked for immediate delivery by leading parts Distributors.

* TRADE MARK

Printed in U.S.A.



RFI-SHIELDED COMPONENTS

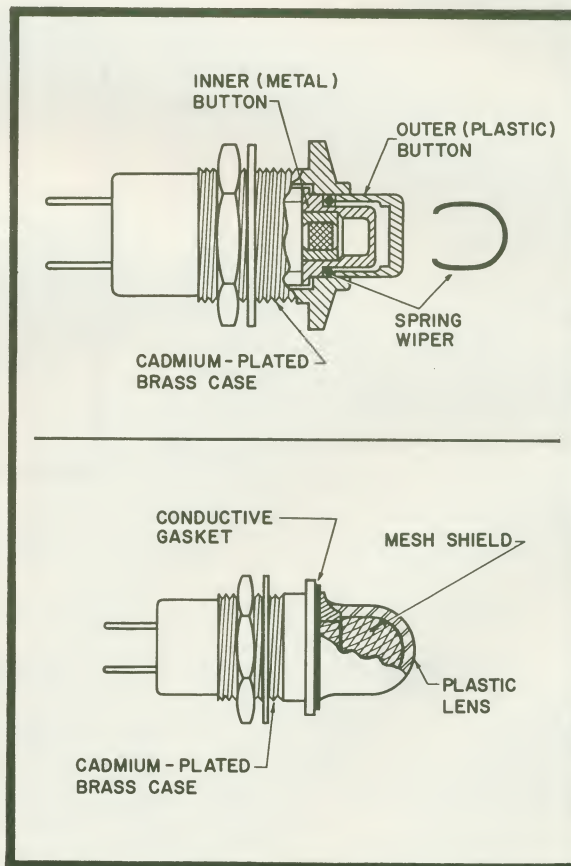
Pushbutton Switches • Indicator Lights

These shielded components are especially designed to minimize emission of radio-frequency interference in airborne and military electronic equipment. Conventional front-of-panel components often permit RFI leaks in an otherwise well-shielded system, since they contain areas that are isolated from the panel ground circuit. Typical of such potential RFI radiators are moving metal parts of switches and filaments of lamps. Control Switch shielded components bridge these gaps, and thus effectively attenuate conduction and radiation of RFI in the important 0.15 to 1000 mc range. They are designed to meet requirements for use in radiation-free airborne electronic equipment conforming to MIL-I-26600.

HOW RFI IS CONTROLLED

Pushbutton Switches (upper dwg.): All non-current-carrying moving metal parts within the switch are connected to the switch case through various forms of multi-point-contact spring wipers. A typical form is shown at right. The U-shaped wiper surrounds the inner metal button of the switch and maintains continuous contact with the case at all points of switch travel. Switch cases are cadmium-plated brass to insure a low-impedance RF path to ground through the panel.

Indicator Lights (lower dwg.): Any RFI emission from lamp filaments is absorbed by a metal mesh shield within the plastic indicator lens. Electrical continuity between shield and case is provided by a special conductive gasket, in standard-size removable-lens models; and by permanent bonding, in sub-miniature models. As in the switches, a cadmium-plated brass case completes the path to ground.

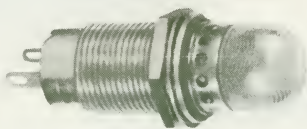


RFI-SHIELDED INDICATOR LIGHTS

STANDARD

These indicators have large ($\frac{1}{4}$ " diameter) lenses projecting from the panel for omnidirectional visibility. Lenses are removable from panel front for lamp replacement. Cases have integral mounting flange with panel cut-out indexing tab. Silver-plated lamp contacts are spring loaded for dependable indication under conditions of vibration.

Incandescent types use MS-25237 lamps. Neon types use NE 2D lamps; have 62,000 ohm resistor built into case.



Model	Lens	Bulb	Voltage	Current (amps)	Matches Non-Shielded Model
STANDARD					
L14220 L14221 L14222	Dome	Incandescent	28 DC 14 DC 6 DC	0.04 0.08 0.20	L14000 L14001 L14002
L15220		Neon	115 AC	0.001	L15010
L14225		Without Lamp	—	—	L14005
SUB-MINIATURE					
L10420 L10020	Dome	Incandescent	28 DC 5 DC	0.024 0.060	L10400 L10000
L10520 L10120	Flat, circular in cylinder mount		28 DC 5 DC	0.024 0.060	L10500 L10100
L10620 L10220	Flat, circular for flush panel mounting		28 DC 5 DC	0.024 0.060	L10600 L10200

SUB-MINIATURE

These tiny RFI-shielded indicators help designers solve the space/weight problem in crowded aircraft panels. All types are within $\frac{1}{16}$ " overall length and weigh less than 0.032 oz. Lamp, lens, and RFI shield are molded into the stainless steel case to form a permanently moisture-proof unit.

The long life expectancy of these indicators—16,000 hours for the 28V models, 60,000 hours for the 5V—usually matches the projected useful life of the equipment in which they are installed. Unusually rugged filaments contribute to this long life.

All sub-miniature indicators mount with a single #10-32 stud and have stranded wire leads. Three lens styles cover all requirements:

LENS COLORS AVAILABLE (add appropriate suffix to basic model number)							
	Standard Indicators			Sub-Miniature Indicators			
	Incandescent		Neon	5V		28V	
	Trans-lucent	Trans-parent	Trans-parent	Trans-lucent	Trans-parent	Trans-lucent	Trans-parent
RED	R5	R1	R1	R	R1	R	R1
GREEN	G4	G3	—	G	G3	G	G1
AMBER	AM1	AM	AM	AM1	AM	AM	AM1
WHITE	—	W2	W2	W	—	W	—
YELLOW	Y2	—	—	Y	—	Y	—
BLUE	BL3	BL4	—	BL	BL4	BL	BL1
CLEAR	—	C	C	—	C	—	C

HOW TO ORDER

Specify quantity, model number, and lens color desired. For example, to order 25 flush-mounting 28V sub-miniature indicators with transparent amber lens:
25 L10600AM1



Dome The $\frac{1}{32}$ " diameter lens of this indicator projects a full $\frac{1}{32}$ " in front of the panel, to give maximum all-round visibility.



Flat This model has a flat 0.22" circular lens in a stainless steel mount that projects $\frac{1}{4}$ " beyond the panel. Lens face can be engraved with up to two $\frac{1}{16}$ " characters.

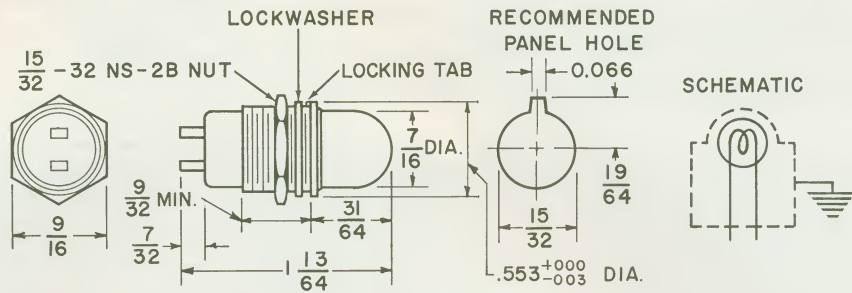


Flush Mounting This $\frac{3}{16}$ " circular lens is set in a beveled stainless steel ring, to mount flush with the panel face. Lens may be engraved.

STANDARD

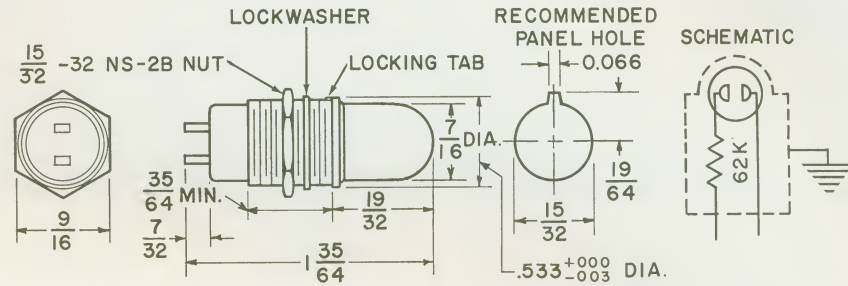
Incandescent

Models
L14220
L14221
L14222



Neon

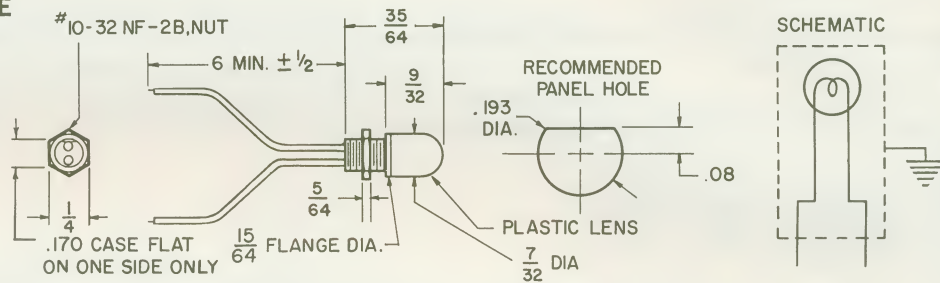
Model
L15220



SUB-MINIATURE

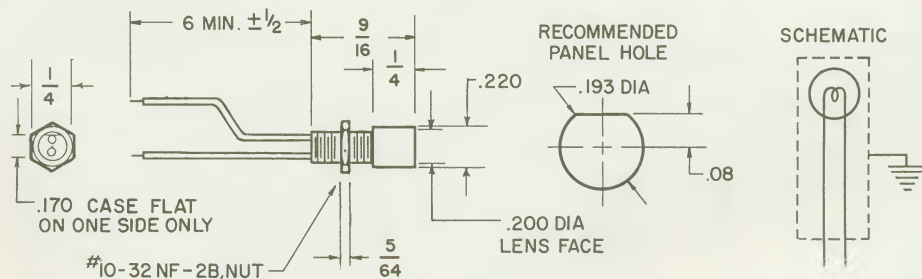
Domed Lens

Models
L10420
L10020



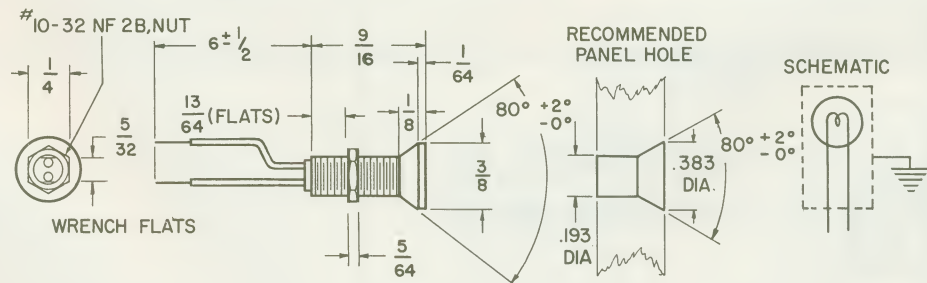
Flat Lens

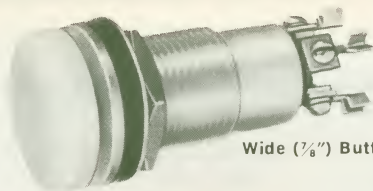
Models
L10520
L10120



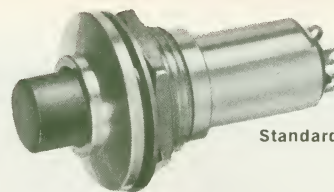
Flush Mounting

Models
L10620
L10220





Wide (7/8") Button Type



Standard (3/8") Button Type

RFI-SHIELDED PUSHBUTTON SWITCHES

These rugged shielded units have the same high-quality construction that has earned standard Control Switch pushbuttons a reputation for long-life reliability. Minimum life expectancy is 25,000 operations at full rated load. All switches have 1000V dielectric strength and will withstand 50G shock and 20G vibration loads. Bodies are moisture-proof in accordance with MIL-S-6743.

Momentary-contact models give the operator a positive snap-action feel and provide fast make-and-break with high contact pressure.

All switches are fitted with large-diameter black painted adapters for panel mounting (in place of the normal front-of-panel nut). These improve panel appearance, permit switch insertion and removal without marring the panel, and provide space for engraving an identifying legend.

	Model	Circuit	Contact	Rating		Matches Non-Shielded Model
				Volts	Amps	
WIDE BUTTON	W9623	Two-Circuit 1 NO & 1 NC	Momentary	28 DC	5 inductive 10 resistive	W9603
	W403P6	Two-circuit 1 NO & 1 NC	Momentary	28 DC	5 inductive 10 resistive	W103P6
	W1501	Four-circuit 2 NO & 2 NC	Momentary	28 DC	2 inductive 4 resistive	WC150P6
	J334P6	DPDT Push-Push	Maintained	28 DC 120 AC	1 resistive	J333P6

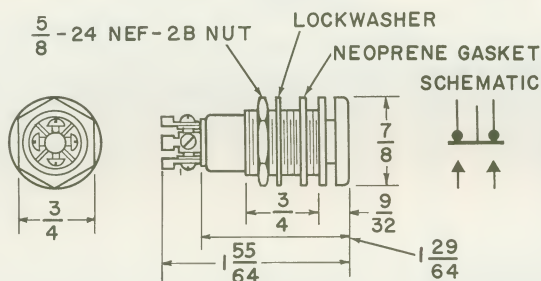
Plastic Pushbutton available in black or red. Black is standard; add suffix "R" to basic model number for red button.

HOW TO ORDER

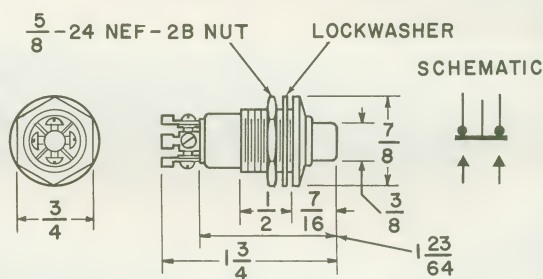
Specify quantity, switch model number, and button color. For example, to order 50 two-circuit switches with red button:

50 W403P6R

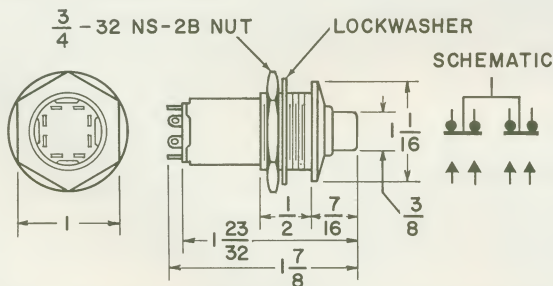
Two-Circuit Model W9623



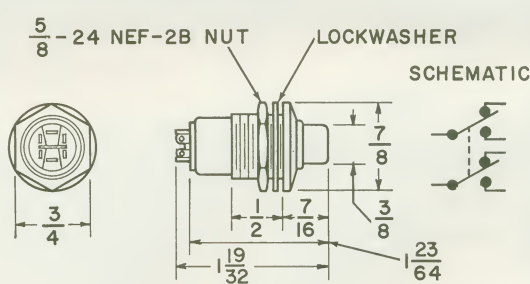
Two-Circuit Model W403P6



Four-Circuit Model W1501



DPDT Push-Push Model J334P6



CONTROL SWITCH DIVISION

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